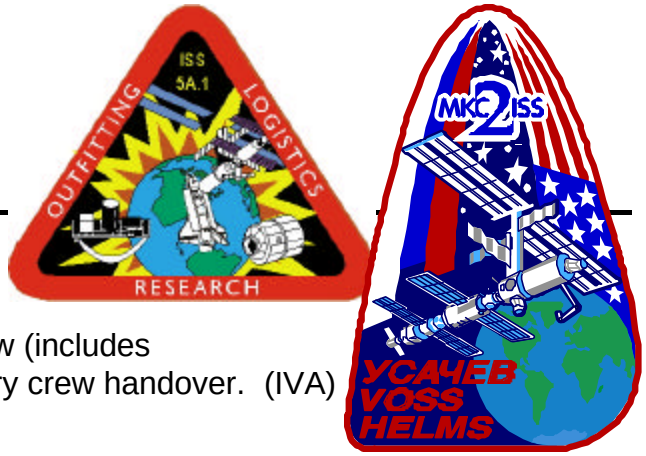
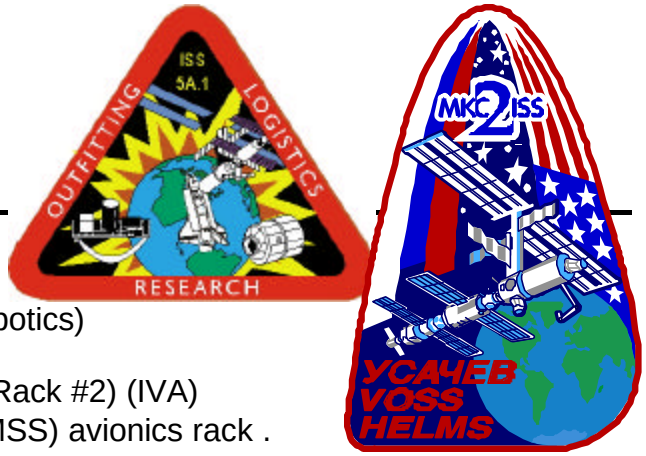
Back Up Charts

5A.1 Mission Priorities



Rotate Crew	1. Rotate Expedition 1 crew with Expedition 2 crew (includes mandatory crew rotation equipment and mandatory crew handover. (IVA)
Middeck Transfers	2. Transfer from middeck and stow in ISS critical systems, maintenance, and crew related cargo per the Flight 5A.1 Transfer Priority list. (IVA)
Water Transfer	3.. Perform water transfers' mandatory transfer quantities adjusted based upon real-time assessments (IVA)
Relocate PMA3	4. Release PMA-3 / Node 1 umbilical, and use SRMS to relocate PMA-3 from Node 1 Nadir to Node 1 port side (preparatory for MPLM berthing) (EVA)
Remove Port Early Antenna	5. Remove port early comm antenna, using the SRMS to assist (preparatory for MPLM operations) (EVA/Robotics)
Berth MPLM	7. Berth MPLM to Node 1 nadir (using SRMS), activate, and checkout the MPLM. (Requires prior removal and stowage of port early comm antenna and relocation of PMA-3 (EVA/Robotics)
MPLM Transfers	8. Transfer from MPLM and stow in the ISS, critical systems, maintenance, and crew related cargo per the 5A.1 Transfer Priority List (IVA)

5A.1 Mission Priorities (cont')



MPLM Return	9. Return MPLM to PLB using SRMS (IVA/Robotics)
Rack Transfers	11. Transfer and install on DDCU rack (DDCU Rack #2) (IVA) 12. Transfer and install Lab Mobile Servicing (MSS) avionics rack . (IVA)
Install RWS	13. Install Robotic Workstation (RWS) equipment (IVA)
Install LCA & RU	14. Transfer Lab Cradle Assembly (LCA) to U.S. Lab, using the SRMS to assist, install and connect umbilical. 15. Transfer and install PDGF Rigid Umbilical (RU) to U.S. Lab, using the SRMS to assist. Activate keep alive power. (EVA/Robotics)
Continue Rack Transfers	16. Transfer and install second DDCU rack (DDCU #1) . Requires closure of CIDS (EVA/IVA) 17. Transfer and stow second RWS workstation 18. Transfer and install US Lab Avionics MSS Cupola Rack 19. Transfer and install the CHeCs rack/equipment (IVA)
Install ESP & PFCS	20. Remove from the ICC, transfer and install External Stowage Platform (ESP) on the aft port Lab trunnion, and remove from ICC, transfer and install PFCS critical spare. Connect associated umbilicals. The SRMS shall assist the transfer of the ESP and PFCS. (EVA/Robotics)

5A.1 Mission Priorities (cont')

Continue Transfers	21. Transfer from midddeck and MPLM and stow in ISS remaining cargo and utilization equipment per Flight 5A.1 Transfer priority list. 22. Transfer and stow HRF Rack-1 and Utilization Experiment Unique (EUE)to the ISS, and return Utilization EUE to the Middeck. (IVA) 23. Transfer from ISS and stow in the MPLM and Middeck, return cargo, including utilization equipment, per the Flight 5A.1 Transfer Priority List.
Rack Activation	24. Activate and checkout RWS in the US Lab and verify video connectivity to Orbiter. Includes transfer of portable computer system (PCS) and two artificial vision unit (AVU) hard disc drives and two AVU video tapes from stowage.
Power MPLM from ISS	25. Power 124 VDC power to the MPLM from ISS> Includes connecting MPLM and DDCU#2 rack jumper cables, closure of CIS via EVA and rack activation and checkout. (IVA)
Continue Rack Activation	26. Assemble, activate and checkout CHecs Rack. (IVA)
KU-Band Activation	27. Install, activate and checkout KU-Band receiver – forward link. (IVA)).

5A.1 Mission Priorities (concluded)

Payload Operations	28. Perform HRF H-Reflex and education experiment activities during joint operations (IVA)
IMAX Filming Perform DTOs	29. Perform IMAX3D camera operations for filming 5A.1 activities in Russian and U.S. segments 30. Perform DTO 257 31. Perform DTO 261, ISS On-Orbit Loads Validation (reboost only).
Perform Mated Maneuvers	32. Perform mated maneuvers. 33. Perform mated attitude control 34. Perform imagery survey of the ISS exterior during orbiter fly around after

Assembly
Flight Interdependencies

Previous Flight

5A.1

1. Install and activate US Lab to a habitable level
2. Relocate PMA-2 to Lab forward CBM, activate and checkout PMA-2
3. Install WIFs and handrails on the US Lab and P6 long spacer
4. Remove PMA3 to Node 1 ground straps
5. Install and configure CIDs for DDCU racks
6. Reconfigure RAIU and DAIU to support Orbiter docked communication
7. Deploy ZSR racks

Future Flight

6A

1. Install PDGF Rigid Umbilical and Lab Cradle Assembly
2. Transfer, install and checkout DDCU's
3. Transfer, install and activate robotic workstation equipment
4. Install LCA and MTSAS-A
5. Perform DTO 257 Structural Dynamics Model Validation
6. Install and checkout HRF rack

7A

1. Deliver FSS System hardware
2. Fill and activate Node 1 TCS
3. Fill Node 1 Waste Water

5A Stage Readiness Requirements for 5A.1

Assembly

United States Laboratory (US lab) is operational

Power distribution system operational

Command and data handling system from Node 1 to US Lab in place

Vehicle attitude control transferred from SM to US Lab.

Active thermal and environmental control provided to the USOS

All elements of the ISS vehicle are accessible. (generic)

All necessary steps to undock Progress have been completed.

Communication

Ground has command/telemetry capability to the US Lab and voice capability with the ISS crew to support rendezvous, docking/undocking and assembly activities.

S-band high rate communication is operational.

5A.1 Stage Launch Commit Requirements

Thermal/Environmental

Early External Active Thermal Control System (EEATCS) Pump Flow Control Subassembly (PFCS) is operational.

- Single event loss of ammonia during QD operations

ISS vehicle is maintaining pressure integrity. (generic)

ISS vehicle is maintaining a habitable atmosphere. (generic)

Assembly

All necessary steps to undock Progress have been completed.

Attitude Control

SM or Lab is capable or expected to be capable of maintaining attitude control of the ISS at the docking attitude to support docking operations with an accuracy of 2 deg. per axis peak to peak and +/- 0.04 deg./sec. (generic)

Stage Utilization

US Payloads

- Crew Earth Observations
- EarthKAM
- Bonner Ball
- Hoffman Reflex
- DOSMAP
- Passive Dosimeter
- MACE II (may stay on orbit after Inc 1)

US SDTOs

- Final selection of SDTOs still in approval cycle

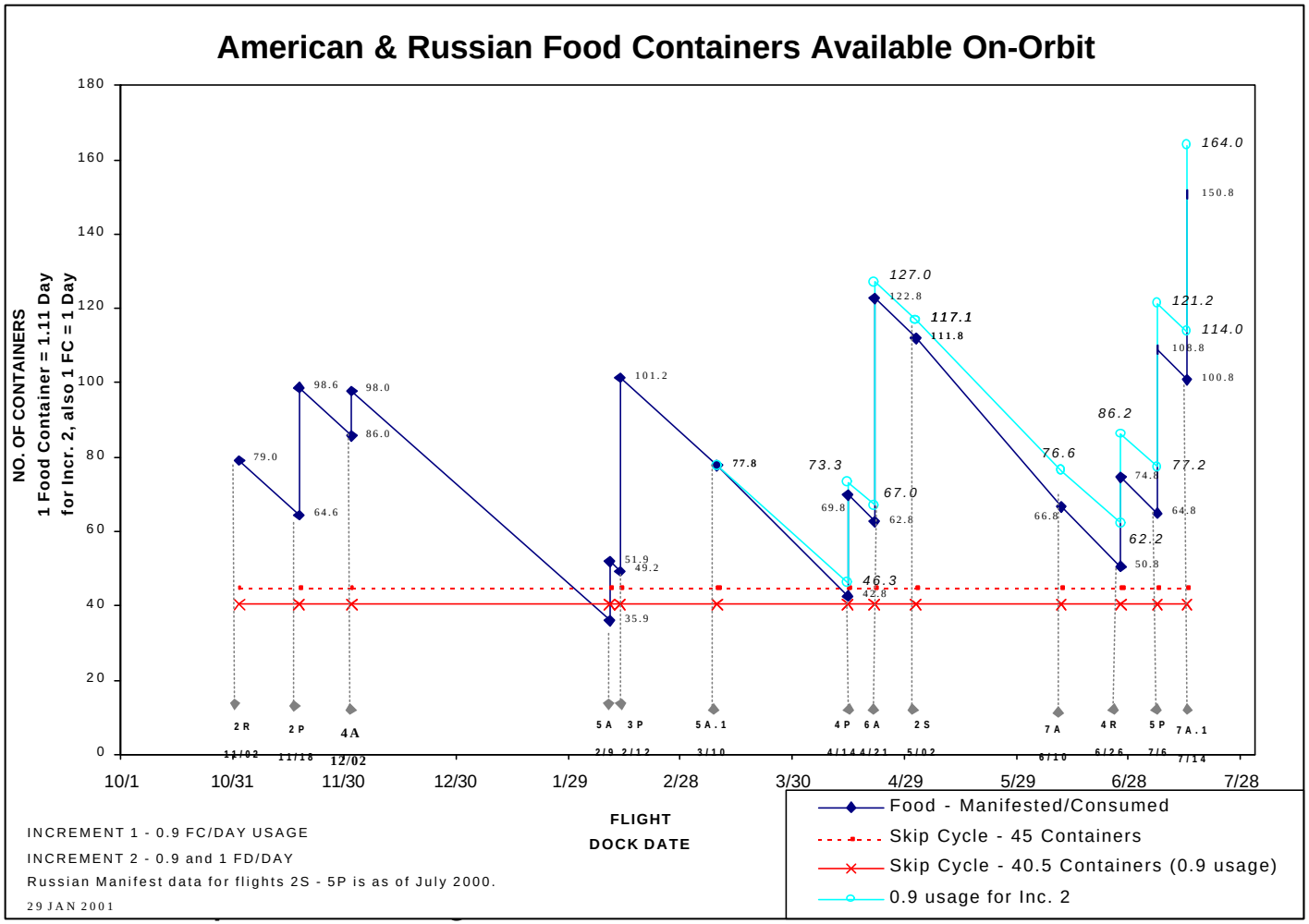
Stage Utilization (concluded)

Russian Payloads

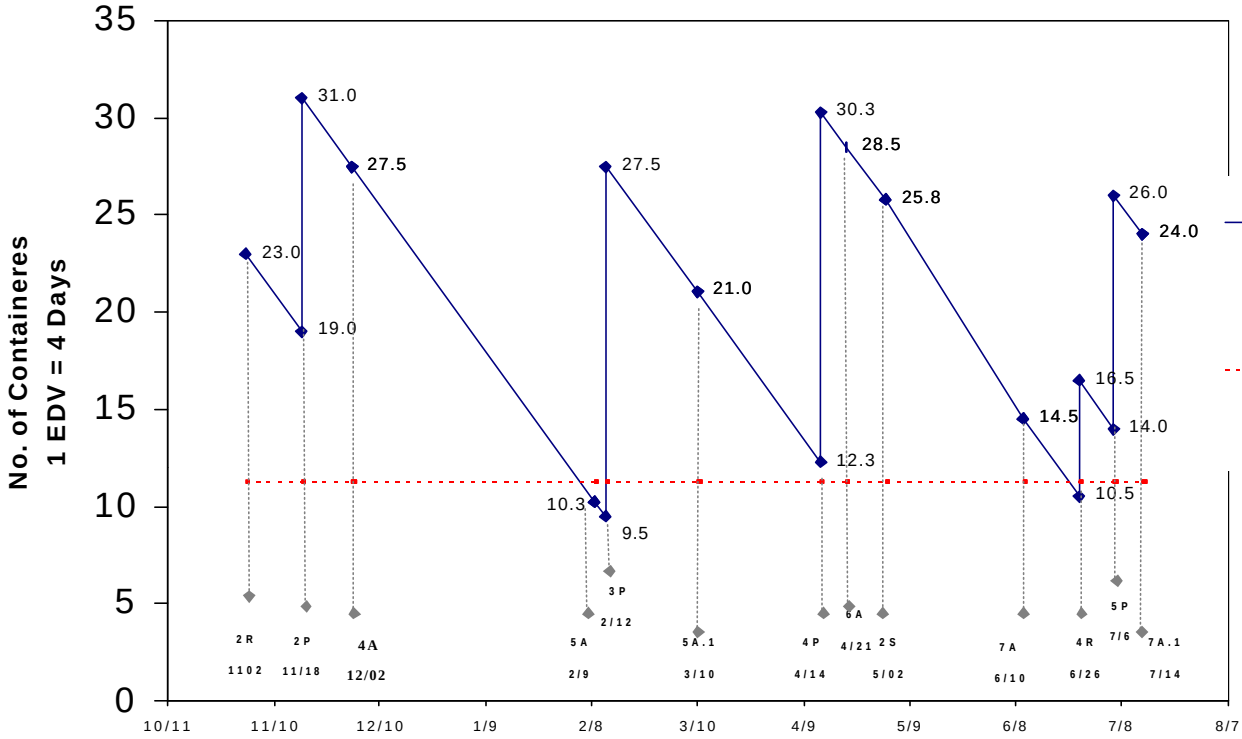
- Bioecology
- Biodegradation
- Paradont
- Poligen
- Prognoz
- Kardio
- Bradoz
- Farma
- Uragan
- Toxicity
- Toksichnost
- Bezopasnost VKD
- Massoperenos
- Global Timing System
- CPCF-2
- Plazmennyi Kristall
- Skorpion
- Vzgliad
- Biosphere
- Diatomea

Russian SDTOs

- 13001-R: Identification
- 12001-R: Tenzor
- 13002-R: Izgib
- 12003-R: Privyazka
- 16001-R: Iskazheniye
- 15001-R: Infrazvuk
- 16002-R: Meteroid
- 12002-R: Vektor-T


American & Russian Food Containers Available On-Orbit
NO. OF CONTAINERS
1 Food Container = 1.11 Day
for Incr. 2, also 1 FC = 1 Day
180
160
140
120
100
80
60
40
20
0
10/1
10/31
11/30
12/30
1/29
2/28
3/30
4/29
5/29
6/28
7/28
FLIGHT
DOCK DATE
2R
2P
4A
5A
3P
5A.1
4P
6A
2S
7A
4R
5P
7A.1
11/02
11/18
12/02
2/9
2/12
3/10
4/14
4/21
5/02
6/10
6/26
7/6
7/14
79.0
64.6
98.6
86.0
98.0
51.9
49.2
35.9
101.2
77.8
73.3
69.8
62.8
67.0
46.3
42.8
127.0
122.8
117.1
111.8
66.8
76.6
74.8
62.2
50.8
86.2
64.8
77.2
108.8
100.8
121.2
114.0
150.8
164.0
Food - Manifested/Consumed
Skip Cycle - 45 Containers
Skip Cycle - 40.5 Containers (0.9 usage)
0.9 usage for Inc. 2
INCREMENT 1 - 0.9 FC/DAY USAGE
INCREMENT 2 - 0.9 and 1 FD/DAY
Russian Manifest data for flights 2S - 5P is as of July 2000.
29 JAN 2001

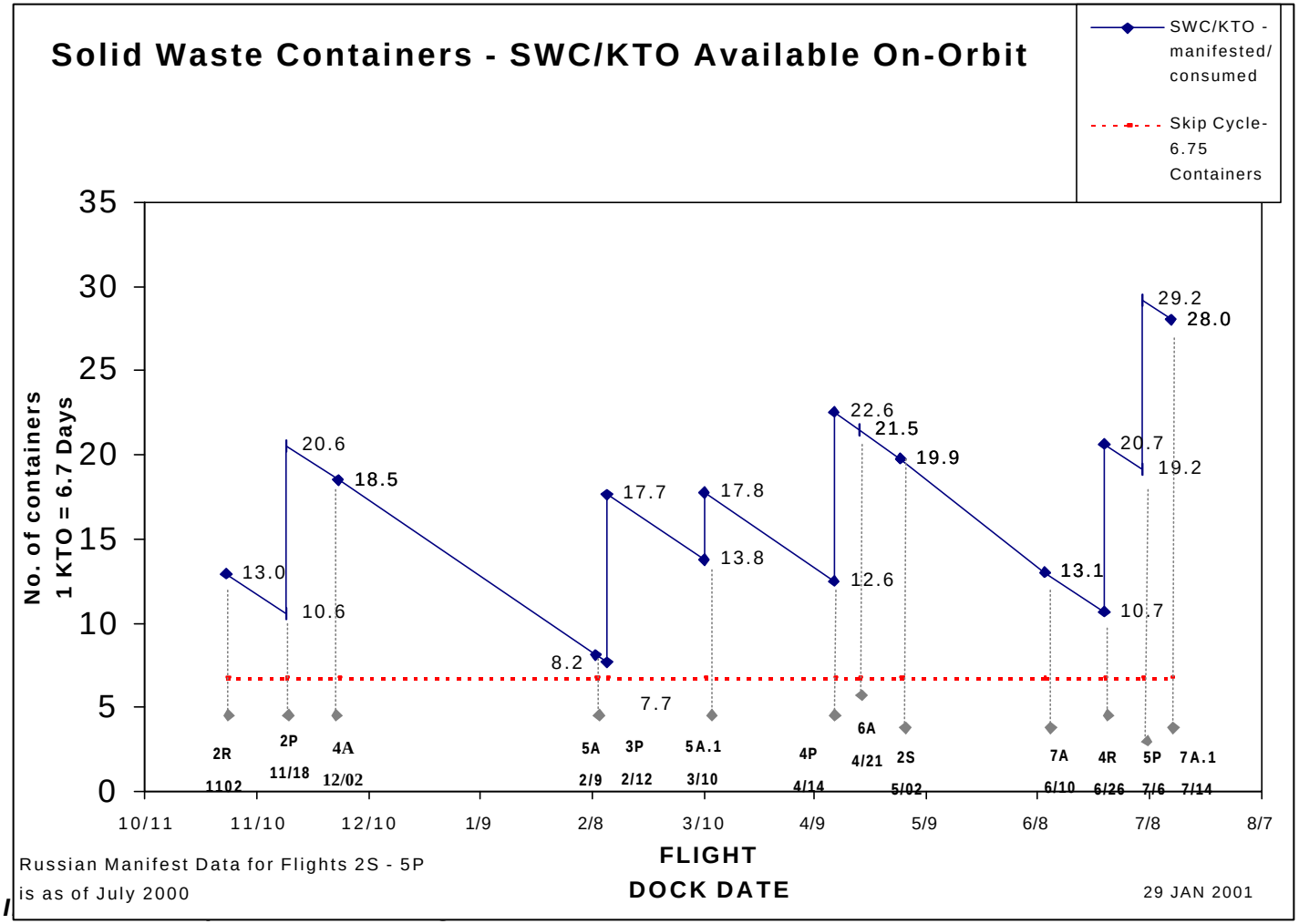
EDVs Available On-Orbit



Russian Manifest Data for Flights 2S - 5P is as of July 2000.

29 JAN 2001

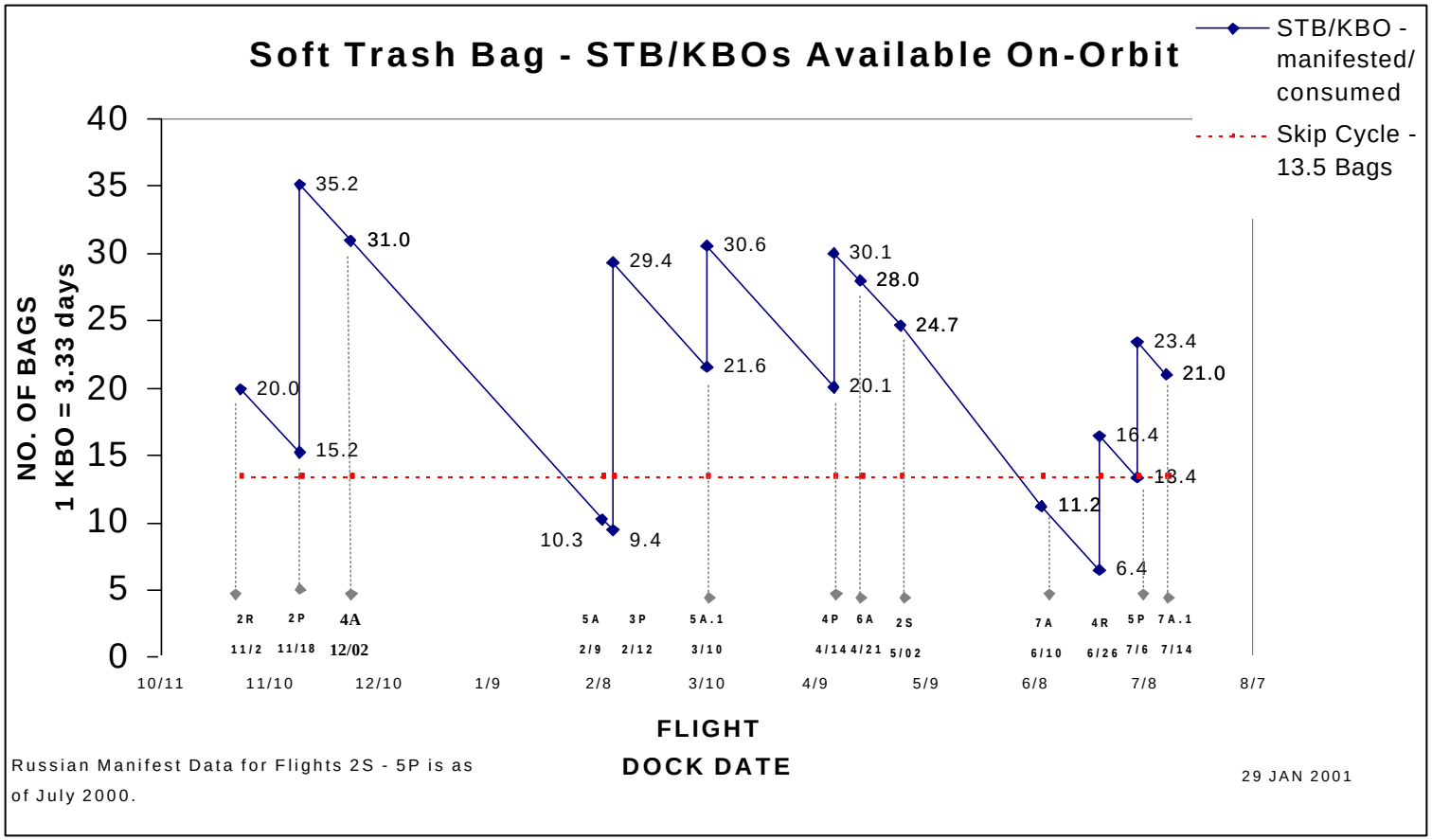
Solid Waste Containers - SWC/KTO Available On-Orbit



Russian Manifest Data for Flights 2S - 5P is as of July 2000

29 JAN 2001

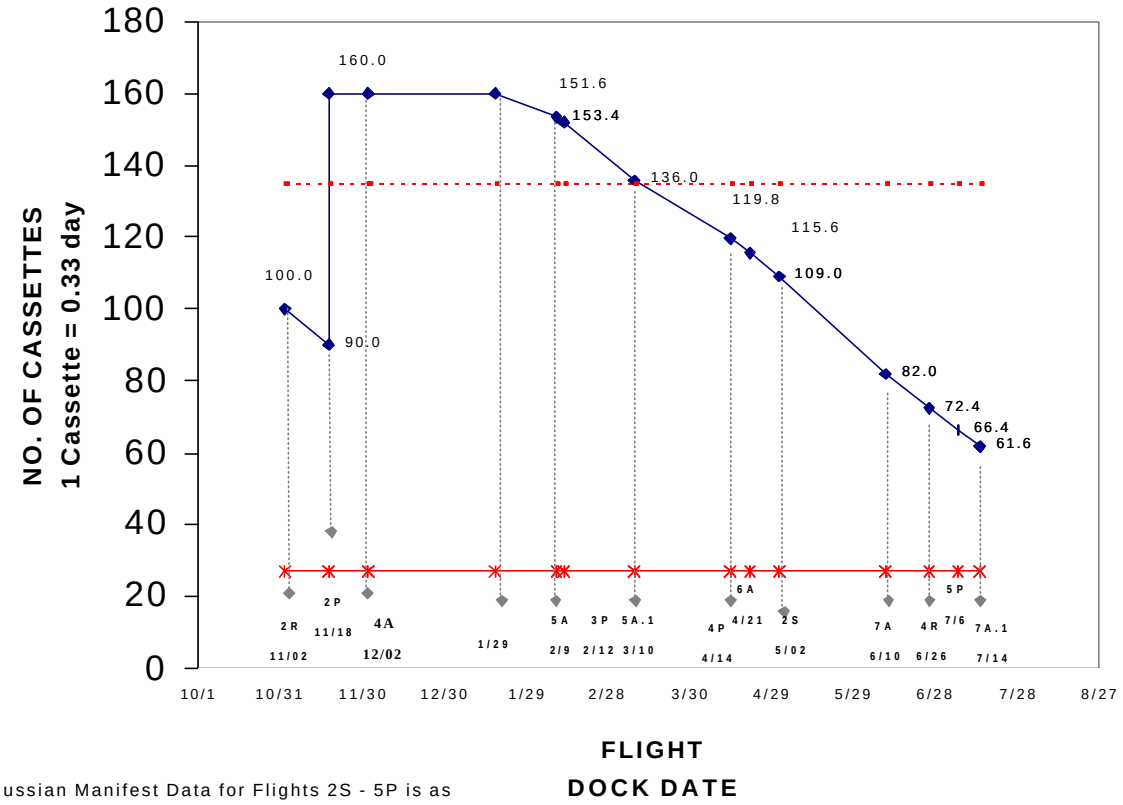
Soft Trash Bag - STB/KBOs Available On-Orbit



Russian Manifest Data for Flights 2S - 5P is as of July 2000.

29 JAN 2001

SFOG (Oxygen) Cassettes Available On-Orbit



Oxygen - manifested/ consumed

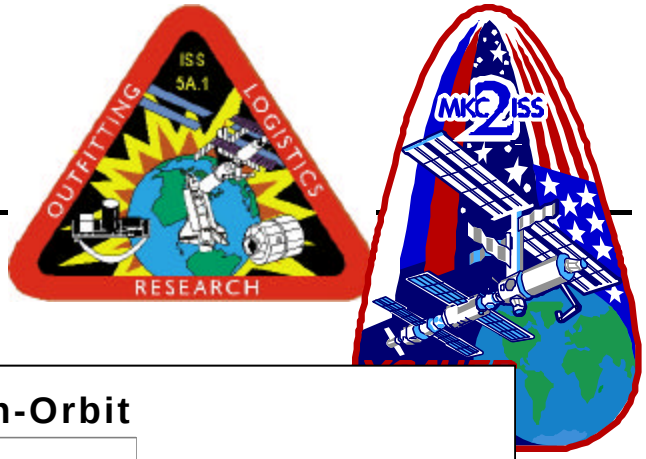
Skip Cycle at full usage (45 days) - 135 Cassettes

Skip Cycle for maintenance protection (20% of 45 days) - 27 Cassettes

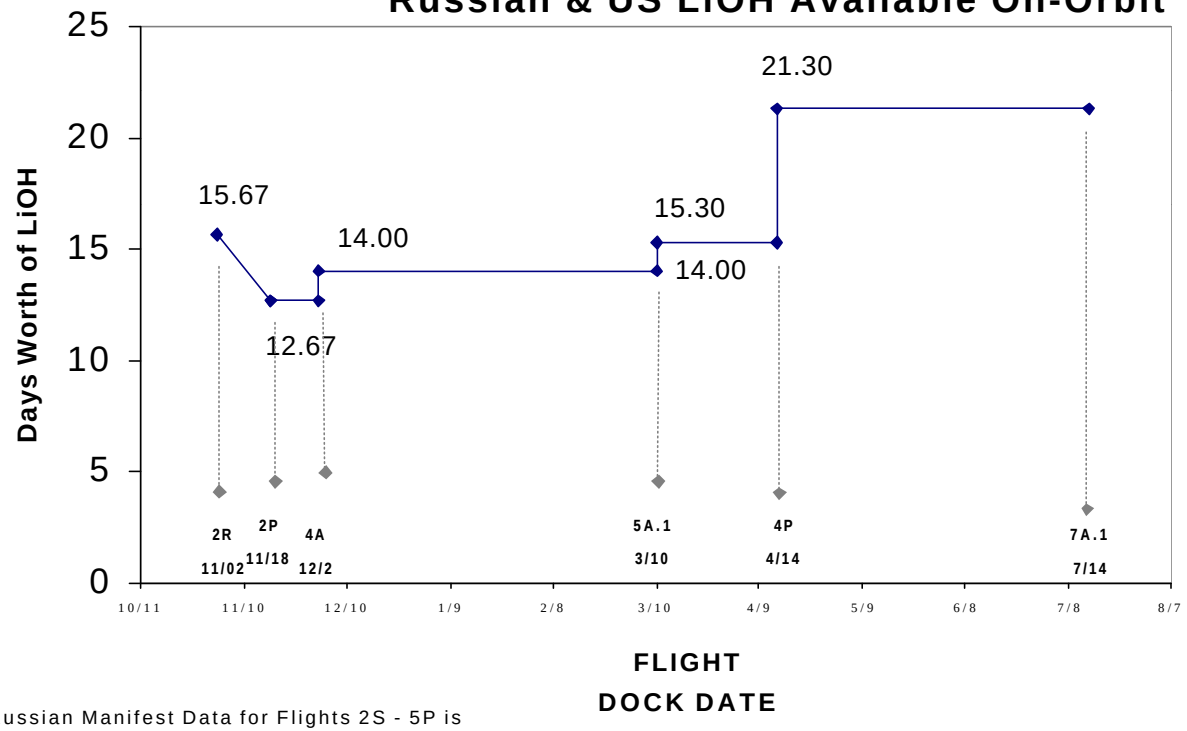
NOTE: Consumed qty/time represents Elektron down for maintenance and/or high beta angles.

Russian Manifest Data for Flights 2S - 5P is as of July 2000

29 JAN 2001



Russian & US LiOH Available On-Orbit



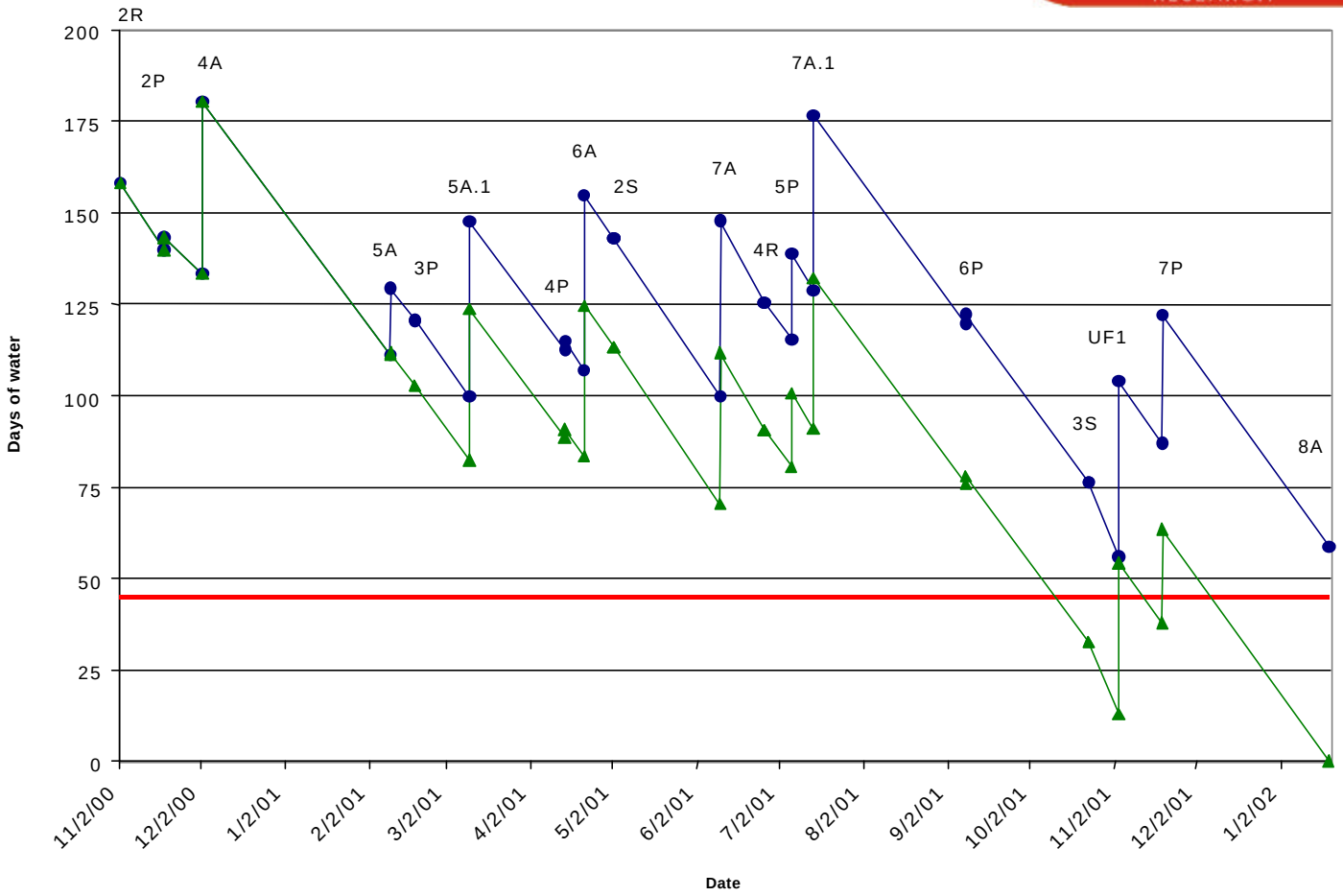
LiOH

Skip Cycle - Vozdukh Spares & 15 Russian LiOH Cans

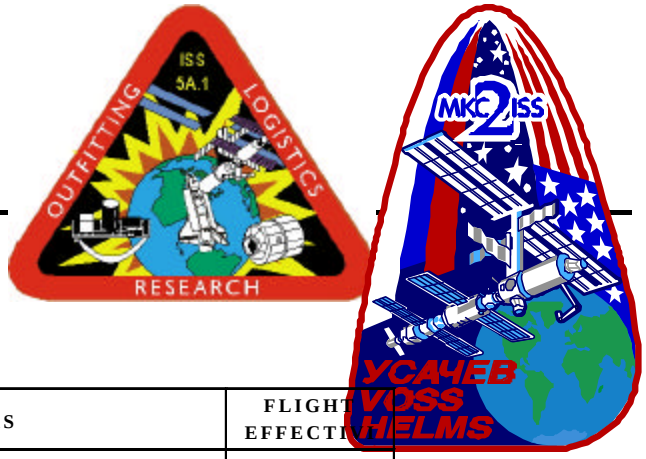
Russian Manifest Data for Flights 2S - 5P is as of July 2000

29 JAN 2001

Days of water on-orbit



5A.1 Approved Waivers



CHANGE ID	TITLE	CHANGE APPROVAL	REMARKS	FLIGHT EFFECTI
SSCN 1369	Request for waiver on wire bundles labeling, waiver MLM-WV-A1-0021	VCB 03/29/99	Alenia request for waiver for relief on wire bundling labeling requirements **(MPLM)**	5A.1 and sub MPLM Flts
SSCN 1370	Request for waiver on Data Bus Length, waiver MLM-WV-A1-0022	VCB 07/08/99	Alenia request for waiver for relief on Data Bus Wire Length **(MPLM)**	5A.1 and sub MPLM Flts
SSCN 1378	Waiver for Dielectric withstanding voltage (DWV) & Isolation test on harness	TVCP 07/16/99	Alenia request for waiver for relief on DWV & Isolation test requirements on lines which have resistors and jumpers installed **(MPLM)**	5A.1 and sub MPLM Flts
SSCN 1777	CFA ELECTRICAL INTERFACE SIGNALS	ASCP 11/23/99	Violation of failure propagation requirements limited to the area of interface between the MDM and CFA equipment in the MPLM waiver **(MPLM)**	5A.1 and sub MPLM Flts
SSCN 2907	Rack Attachment Points out of Specification	VCB/OSB 10/05/00	NASA acceptance of rack attachment points in their actual relative position inside the MPLM FM1 obtained after first repair process. **(MPLM)**	5A.1
SSCN 4503	MSS Latency Waiver CSARFW 0032~~ABC~~D	SSPCB 02/14/01	In CSA waiver CSARFW0032C, the estimated worst case total latency from analysis in SPAR-SS-TN-MOPS-1010 indicates that the human-in-the-loop command path latencies are all within specified values, however, feedback and total latencies for HIL robot control, and for HIL camera control with video image feedback are exceeded in the worst case by up to 59msec. This waiver is submitted to cover this spec non-compliance.	5A.1

5A.1 Approved Waivers

CHANGE ID	TITLE	CHANGE APPROVAL	REMARKS	FLIGHT EFFECTIVI
SSCN 4968	Waiver for Ultimate Kickloads on MPLM Closeout Panels	VCB 02/05/01	MPLM Betacloth FDS closeout panel was tested to limit load two (2) times. When panel was tested to ultimate load after multiple limit load testing, bi-adhesive tape which attaches panel to aluminum structure pulled loose at 140 versus the required 175 lbs. (MPLM)	5A.1 & 6A
SSCN 5069	SSP30312 Waiver for Artificial Vision Unit (AVU)	SSPCB 02/14/01	Waiver to application of SSP 30312, section B.3.5.2, Wire and Cable Derating Criteria, Note 6 is requested for the design of the AVU.	5A.1

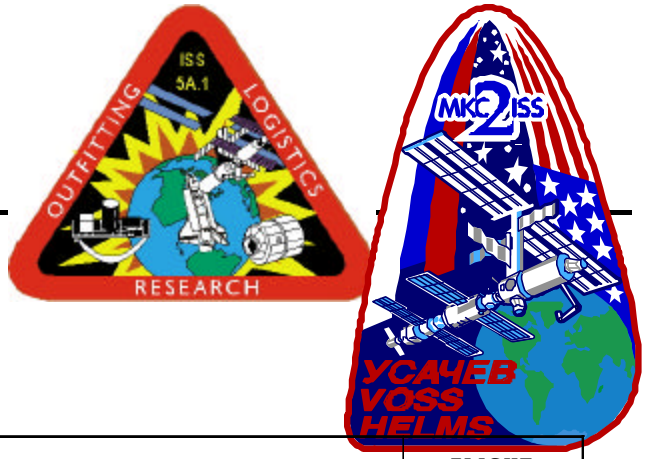
5A.1 Approved Exceptions

CHANGE ID	TITLE	CHANGE AUTH	REMARKS
SSCN 1371R1	Request for waiver of Thermal Cycling, waiver MLM -A1-0023	T&VCP 11/15/00	Alenia request for waiver for thermal cycling (Directive 1371R1 changes waiver to an exception) **(MPLM)**
SSCN 1637R1	DSD Random Vibration Acceptance Spectra	T&VCP 11/08/00	Originally submitted as waiver, changed to exception by T&VCP panel, grants exception to random vibration acceptance sprectra (Dir 1637R1 changes SSCN from waiver to exception) **(MPLM)**
SSCN 2191	Ku-Band Receiver System and OCA Router in-rush exceedence to SSP-30482 Volume 2	HICP 12/16/99	Exception to SSP 30482 Vol 2
SSCN 2505	Exceptions to SSP 41172B for the Robotic Workstation (RWS)	T&VCP 07/24/99	Exception to SSP 41172B sec 4.2.2.3b, 5.1.2.3b, 5.1.4.3 and 5.1.2.3
SSCN 2640	Exceptions to SSP 41172 for the Integrated Motor Controller Actuator (IMCA)	T&VCP 11/31/00	Exception to SSP 41172
SSCN 2915	Exception to SSP30482, Electrical Power Specifications and Standards – Volume 2: Consumer Constraints for the Health Maintenance System (HMS) Defibrillator	VSIP 08/17/00	Exception requested for the HMS Defibrillator inrush current requirements of SSP 30482
SSCN 3044	Exceptions to SSP 41172D for the Robotic Workstation (RWS) Video Monitors	T&VCP 09/13/00	Exception to the acceptance vibration requirements of SSP 41172B
SSCN 3779	Exception for PMA2 CVIU interface	ASCB 08/02/00	Exception to labs PIDS S683-29523

5A.1 Approved Exceptions

CHANGE ID	TITLE	CHANGE AUTH	REMARKS
SSCN 3887	Exceptions to SSP 41172: Acceptance Random Vibration for the Integrated Motor Controller Actuator (IMCA)	T&VCP 11/08/00	Add exception to SSP 41172 for the IMCA random vibration test
SSCN 4134	Exception to SSP 41172: Limited functional test of the Capture Latch Assembly (CLA) during Thermal Vacuum Acceptance	T&VCP 11/08/00	Exception for 10 CLAs functional testing, T&VCP rules that CLAs meet all requirements.
SSCN 4601	Request for CHeCS IVCPDS Requirements Exception Authorization	GCB/OSB 12/20/00	Exception to IVCPDS performance requirements
SSCN 4685	Exception to PV Module EVA PIDS Requirement for the Ammonia Servicer (S684-10151, Paragraph 3.3.12.6)	VSIP 12/12/00	Adds exception to Appendix B of the PVM P6 Specification
SSCN 4768	Exception to Photovoltaic Module (PVM) EVA PIDS Requirements for the Ammonia Servicer (S684-01151, CI No. FSE0108A, Paragraph 3.2.4.1.5	VSIP 12/21/00	Adds exception to Appendix B of the PVM P6 Specification
SSCN 4785	EXCEPTIONS TO EME REQUIREMENTS FOR SSP 30237, SSP 30240, AND SSP 30243	T&VCP 12/13/00	This change ensures EME requirements technical baseline reflects approved developed design which will provide the appropriate requirements allocation to support ARB and COFR.
SSCN 4902	Exception to SSP 41172: Acceptance Functional, Pressure, and Leak Testing of the US Lab Internal Pressure Cover	VSIP 01/08/01	Boeing released engineering did not require acceptance testing of the pressure cover, there is not sufficient time to perform this test prior to flight.
SSCN 4947	Exceptions to SSP 41172 Qualification and Acceptance Testing for the Early Ammonia Servicer Components	T&VCP 01/17/01	Taking exception to leakage test for flex hose, vent valve, and nitrogen tank. Also exception to random vibration qual for vent valve

5A.1 Pending Waivers



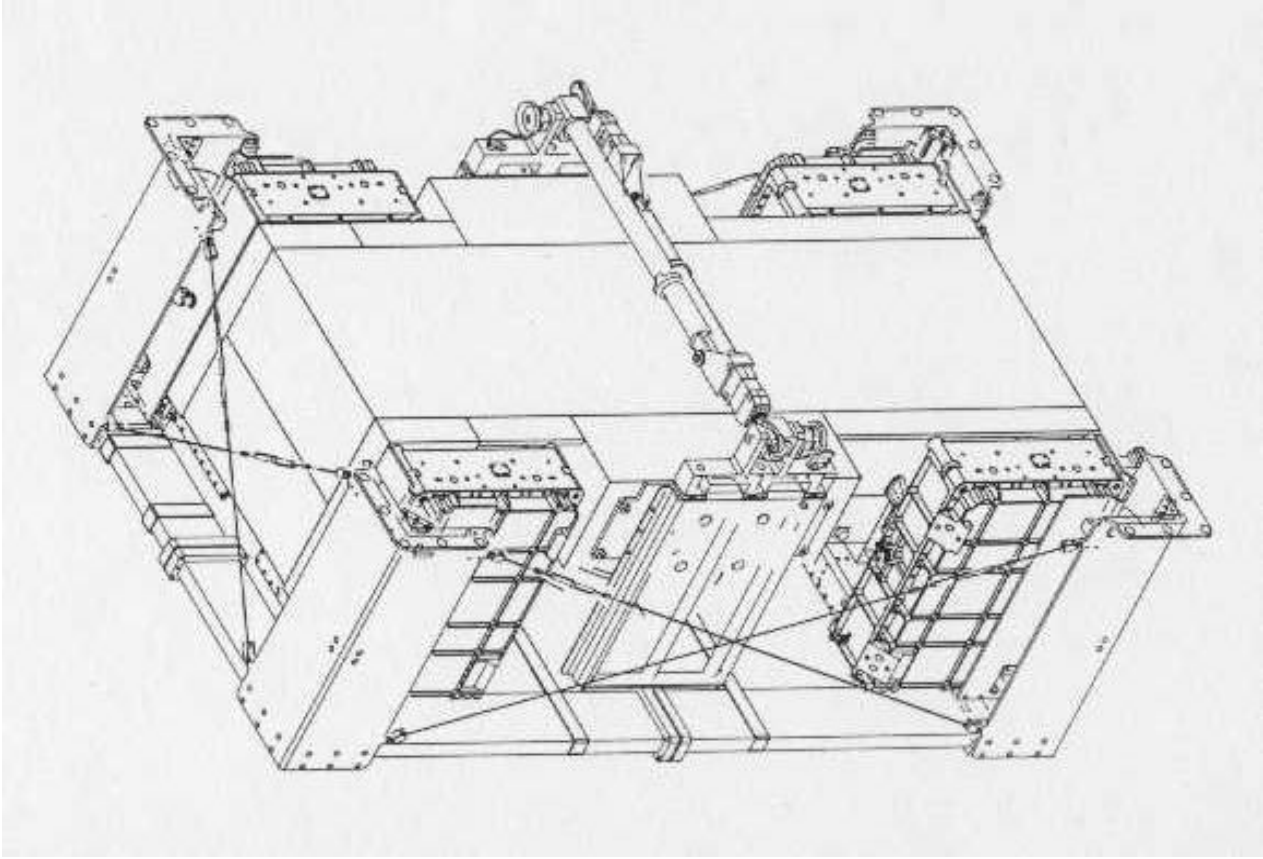
CHANGE ID	TITLE	CHANGE AUTH	REMARKS	FLIGHT EFFECTIVITY
SSCN 4598B	MPLM Cabin Ventilation (waiver)	VSIP	Waiver to fly first three MPLM missions with battery powered fans for use by crew to increase air flow. **(MPLM) NOT POSTED (to be cancelled after IDD Update per Randy M ^c Clendon 02/02/01)**	5A.1, 6A, and 7A.1
SSCN 5026	Waiver to Rack Grounding Requirements on MPLM	VCB	Racks in MPLM need to be grounded to prevent build-up of static charge, ground straps removed due to sharp edges. Waiver will allow MPLM flights 5A.1 and 6A to fly (In concurrence with S&MA 01/30/01) **Posted for IP Signatures: NASA/ASI**	5A.1 & 6A
SSCN 5066	Yellowtag IV-CPDS for Flight 5A.1	GCB/OSB	Yellow tagging following equipment to ensure use restricted to US on-orbit segment only: IVCPDS Instrument Assembly: SEG16103466-301 IVCPDS Power/Data Cable Assembly: SEG16103090-303 IVCPDS Rack Boom Assembly: SEG16103469-301 These items have not been certified for use in the Russian Segment and requires yellow tagging	5A.1
SSCN 5091R1	Request for Waiver – Uninstalled Parts (Rack Standoffs) for MPLM FM-1	MERB/ VSIP	Boeing unable to completely satisfy applicable configuration reconciliation requirements due to uninstalled parts, items are NOT functionally required for launch or landing, no safety issue.	5A.1
SSCN 5092	Request for Waiver – Lost Traceability of Lot Numbers for Quick Release Pins for MPLM FM-1	MERB/VSIP	Boeing unable to completely satisfy applicable configuration reconciliation requirements due to lost Traceability of lot numbers for quick release pins on the knee brace kit for MPLM racks	5A.1
SSCN 5133	Request for Waiver – Insufficient Configuration Accounting System Reconciliation Data for MPLM FM-1	VCB	KSC/MSFC are u nable to completely satisfy applicable configuration reconciliation requirements due to insufficient as-designed/as-built system reconciliation data	5A.1

5A.1 Pending Exceptions

CHANGE ID	TITLE	CHANGE AUTH	REMARKS
SSCN 3616A	Request for Approval of Exception on Fire Suppression Capability in the MPLM Standoffs	SSPCB 02/06/01	Request exception to the fire suppression capability in the MPLM standoff volumes **(MPLM) POSTED FOR IP SIGNATURE: ASI**
SSCN 5008	Exceptions to EME Requirements for SSP 30237	T&VP	Incorporate approved requirements tailoring/exceptions inititiated by Boeing development sites, NASA GFE, and the payload community via the EME Panel
SSCN 5019	Exception to SSP 41172 for the Space Vision System (SVS) Artificial Vision Unit (AVU), P/N 000954-04	T&VP	AVU will not be tested to Protoflight thermal test ranges defined in SSP 41172. AVU will not be powered during prototype vibration testing as defined in SSP 41172

Back-up Charts

TVIS System (Top View)

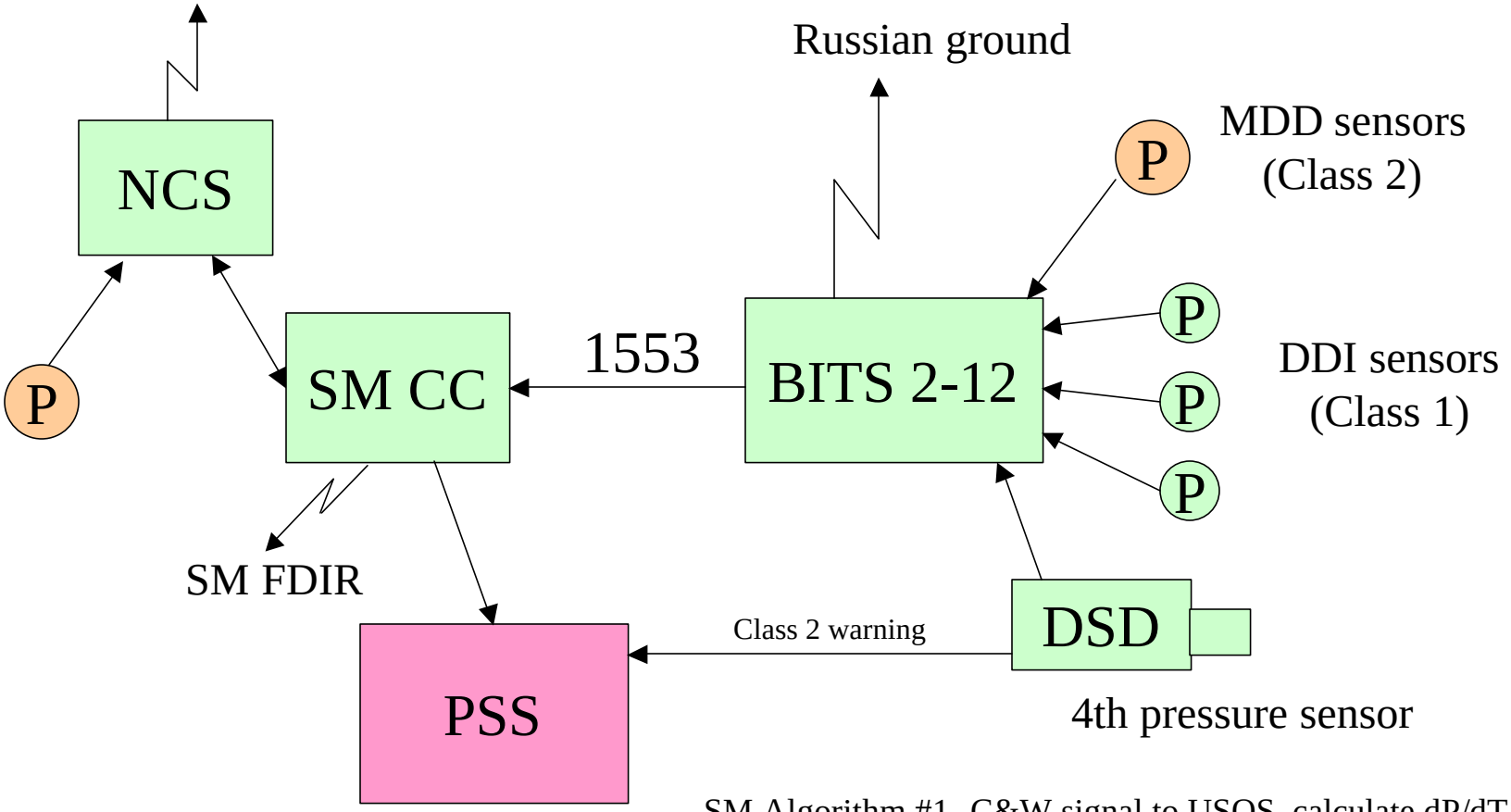


Backup Charts
Vehicle

SM dP/dT Anomaly

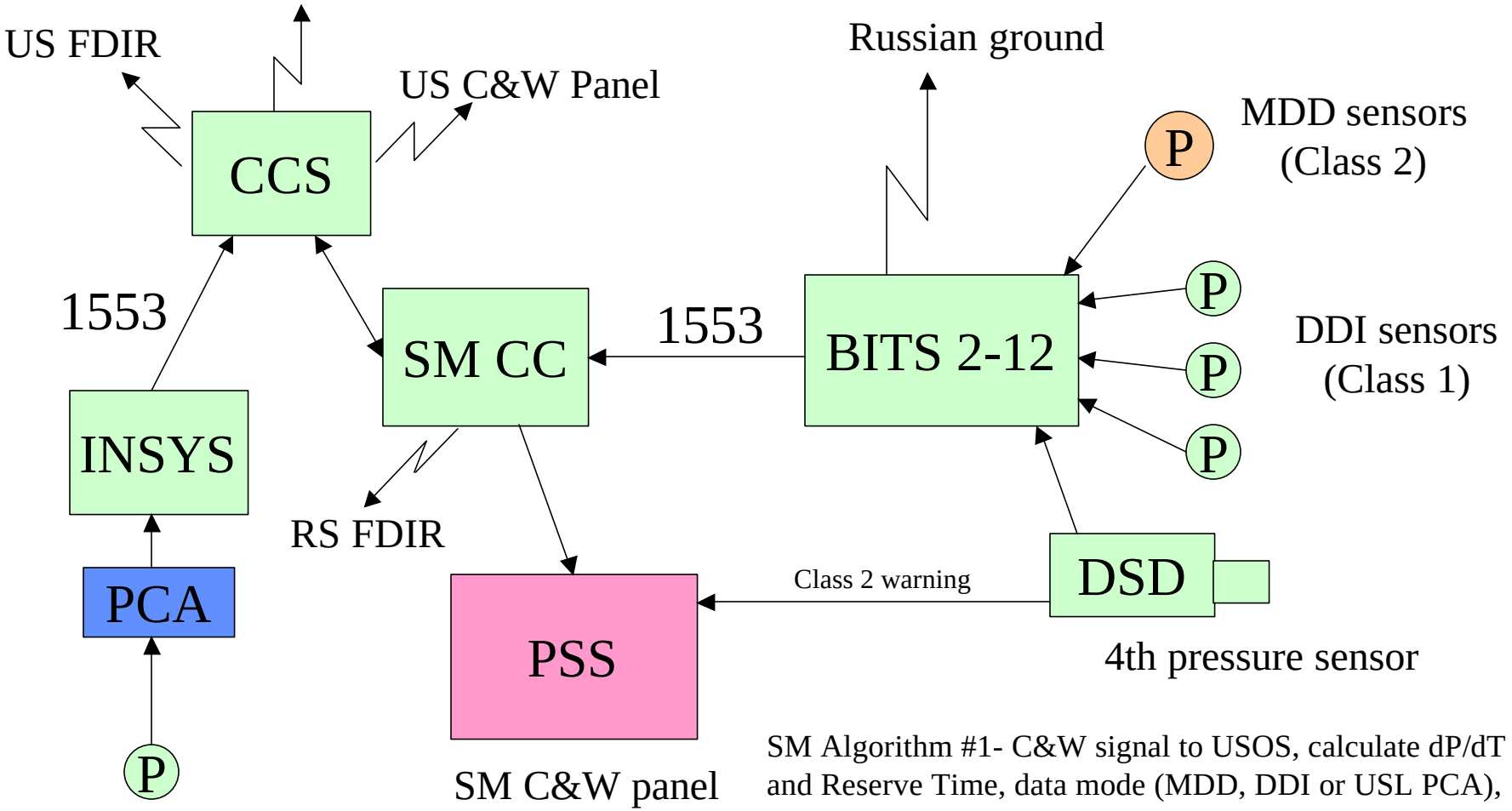
- Prior to and during stage 4A we had four dP/dT indications from the SM DDI Sensors
    - Two were thought to be due to a pressure equalization and two were thought to be due to a type of hysteresis or “sticking” when operating at a high pressure environment (above 780 mmHg)
    - During these events the ISS crew had no annunciation or RS automatic S/W response since Algorithm #2 was inhibited during these events
- Jan 18th MCC-M enabled Algorithm #2
- On Feb 5th the SM three DDI Sensors indicated a rapid depressurization twice
    - SM isolation steps initiated
    - No pressure equalizations were being performed and cabin pressure was less than 780 mmHg
    - Algorithm #2 disabled

dP/dT Pressure Sensors data path (Stage 4A)



SM Algorithm #1- C&W signal to USOS, calculate dP/dT and Reserve Time, data mode (MDD, DDI or USL PCA)
SM Algorithm #2 – SM C&W and SM FDIR

dP/dT Pressure Sensors data path (Stage 5A)

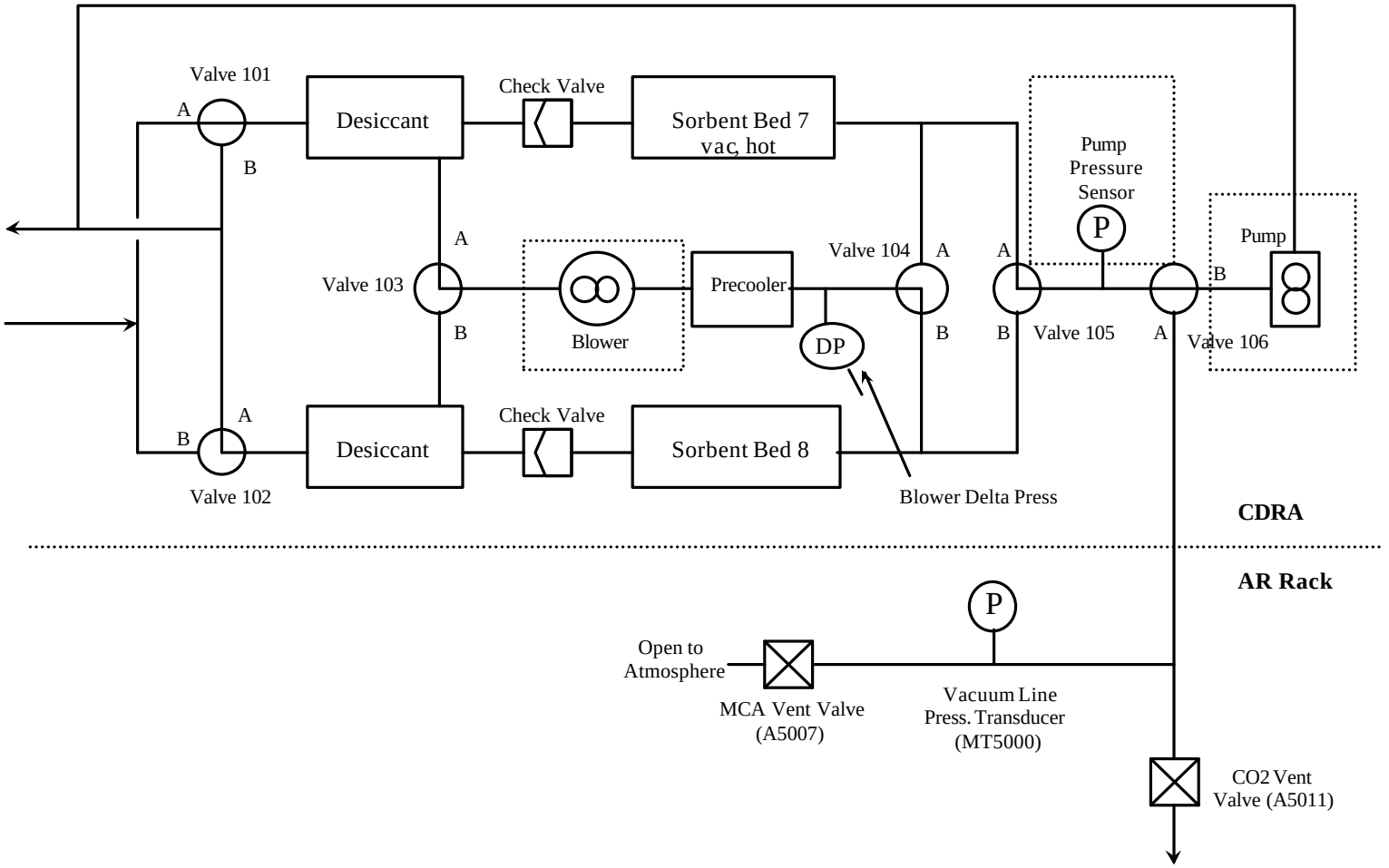


SM Algorithm #1- C&W signal to USOS, calculate dP/dT and Reserve Time, data mode (MDD, DDI or USL PCA), SM C&W

SM Algorithm #2 – RS FDIR

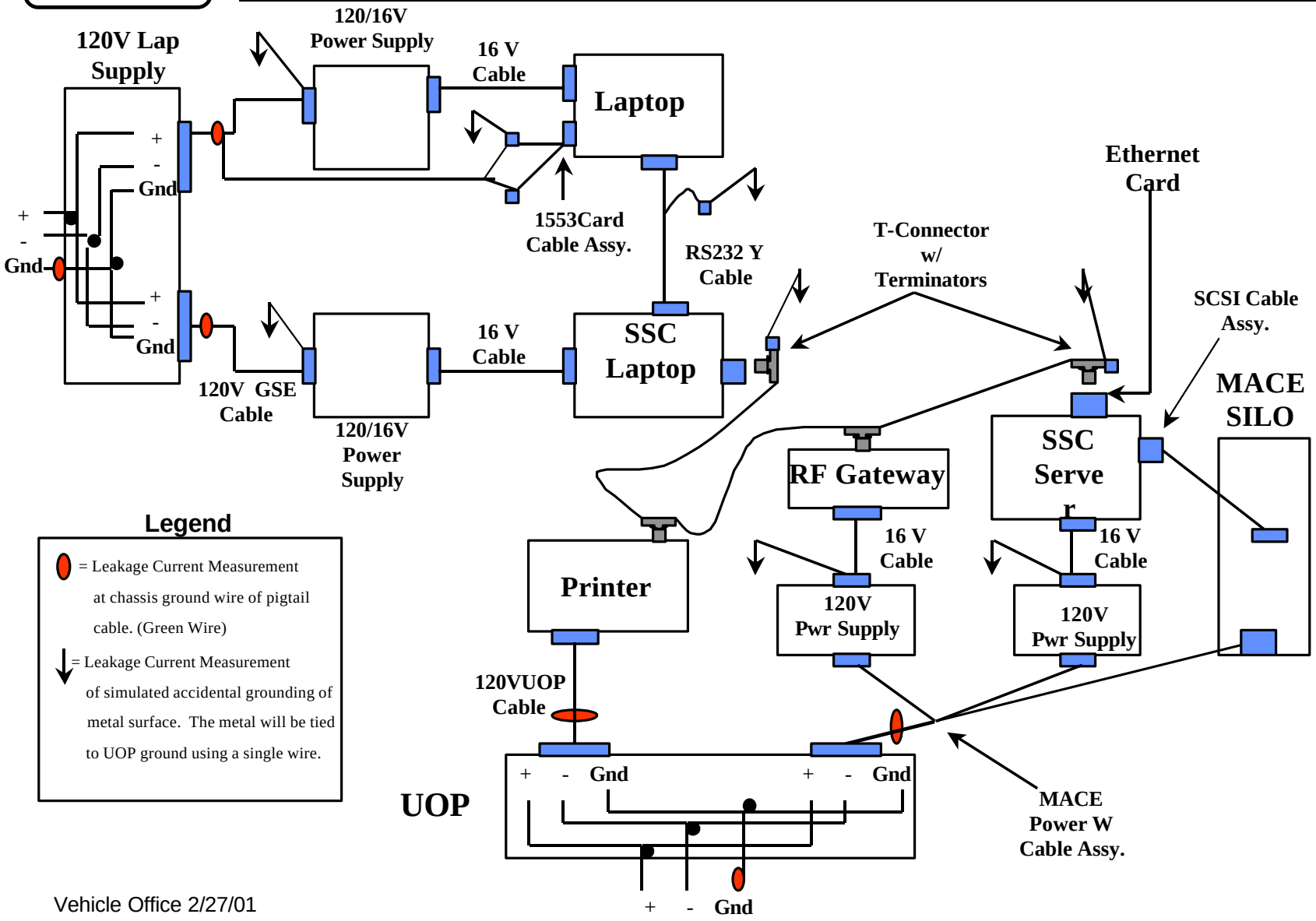
CDRA Schematic

CDRA Half Cycle 1 Valve Positions for Segment 1 Operate Mode



Test Configuration 4

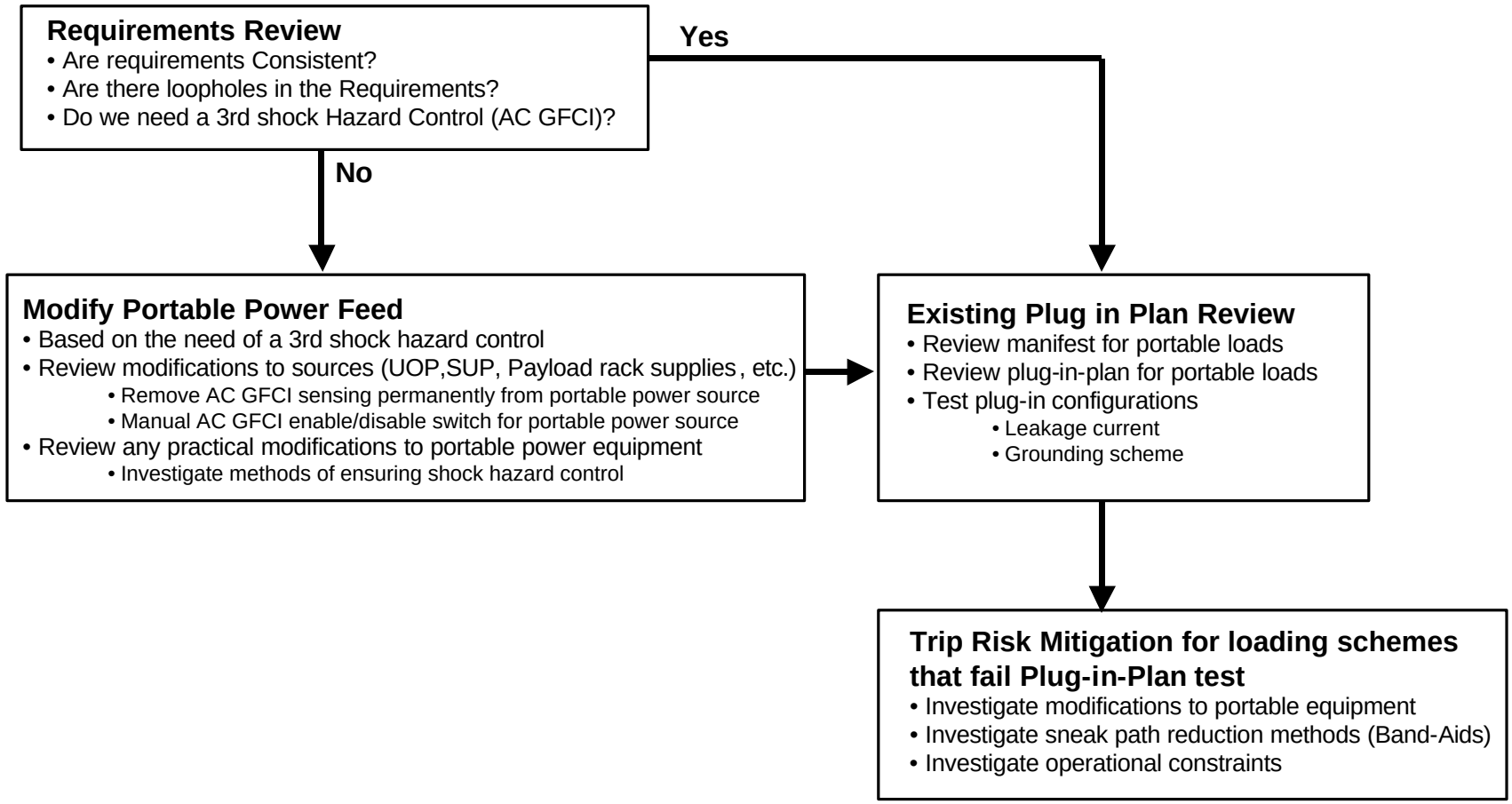
MACE leakage current causes GFCI trip if any device chassis touches structure



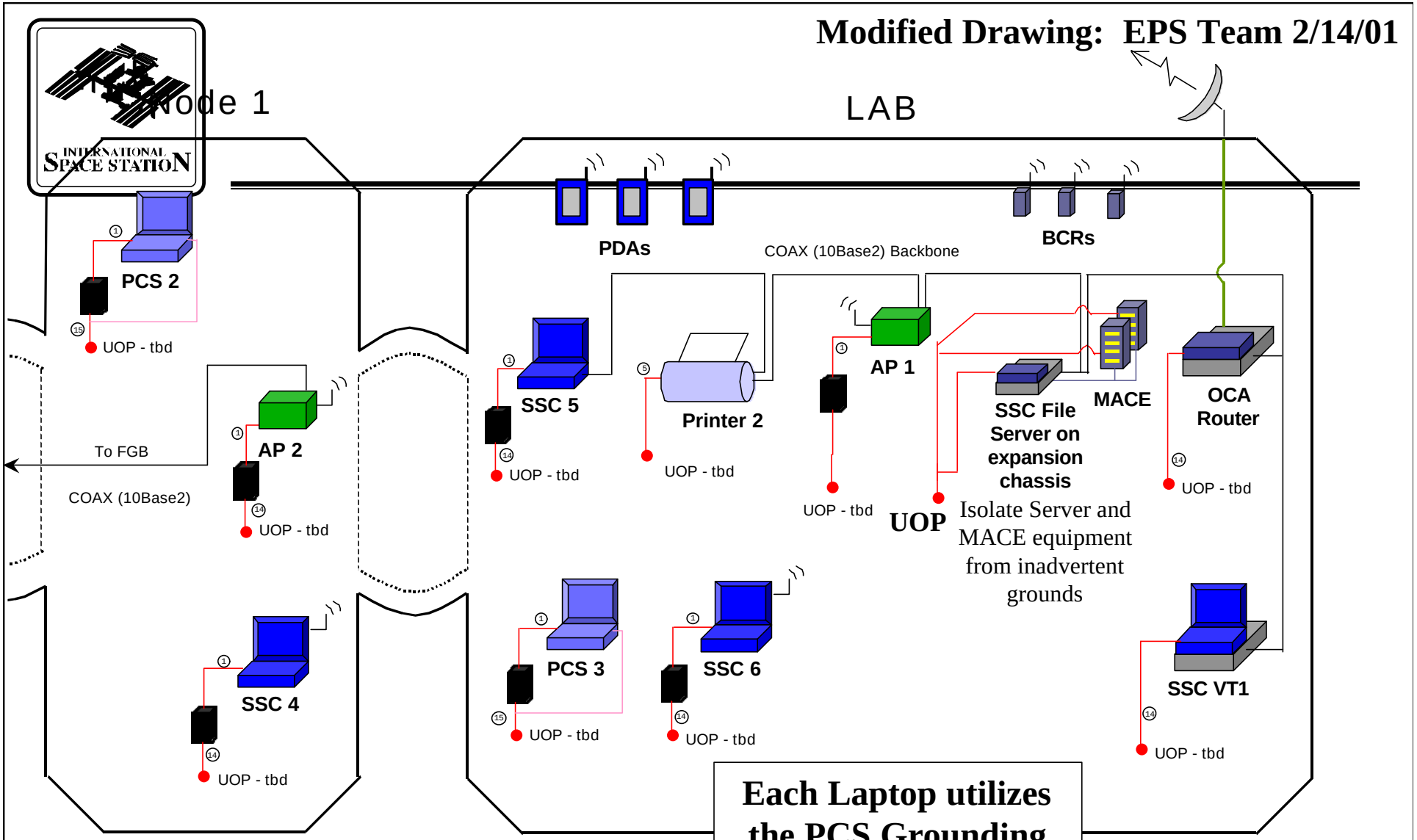
ISS-B/U-C-6

Long-term Resolution Plan

(Condensed version)



Modified Drawing: EPS Team 2/14/01



Each Laptop utilizes the PCS Grounding Adapter except MACE Server

Notes:

1. Drawing shows connectivity only and does not necessarily imply laptop locations.
2. PCS laptops shown for reference and are not part of Ops LAN.
3. See detailed manifest list for part numbers,
4. See sheet 3 for equipment legend.
5. See sheet 4 for power cable legend
6. See Ops LAN ICD for technical details,

Vehicle Office 2/27/01

ISS Operations Network

Flight 5A.1 Usage Chart
Data and Power Connections

drawn by:	DL2\ J. Michel	SSC Ops LAN
checked by:	DL2\ M. Swaby	
date 06/23/00	sheet 2 of 4	

Robotic Workstation Configuration

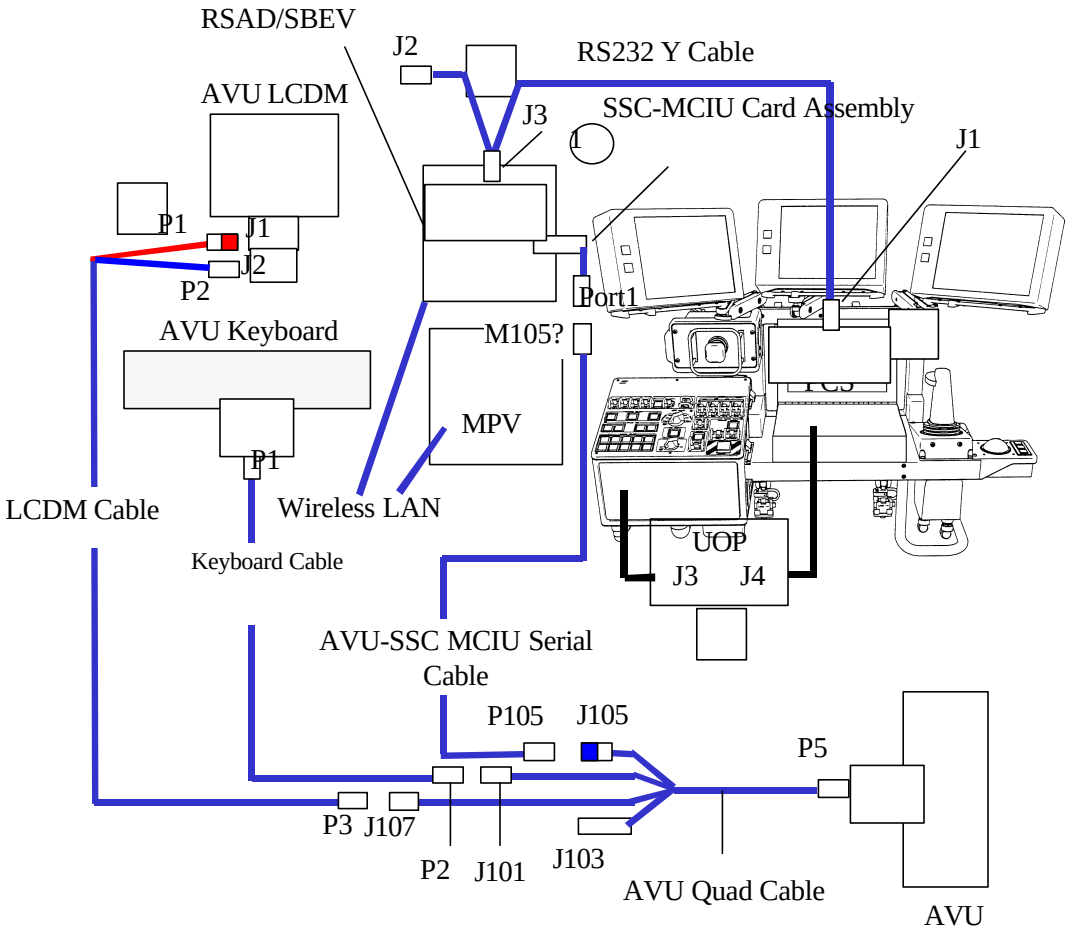
RWS PERIPHERALS CONFIGURATION 1
(RBT/ALL/ PRELIMINARY) PAGE 4 of 6 PAGES

SSC-MCIU Card Assembly consists of the PCMCIA card and attached cable. Insert PCMCIA Card of SSC-MCIU Card Assembly into RSAD/SBEV SSC.

LCDM Cable ("Y") provides both Data and Power to LCDM. Connector design insures correct configuration.

RWS UOP J3 and J4 connectors are for RWS DCP (RWS LB) and Core PCS (CB EXT 1/2) respectively

Connect "Y" cable to 9 pin port labeled COM 1 on back of RSAD/SBEV SSC and PCS



Backup Charts

Program Integration

Michael Engle 281-244-0904

Flight Rule

- ## Flight Rule B13.2.4-2 ISS NOISE LEVEL CONSTRAINTS

A. IF THE 24 HOUR AVERAGE NOISE LEVEL (LEQ24) AS MEASURED BY THE ISS AUDIO DOSIMETER OR AS PREDICTED EXCEEDS 65 dBA:

1. CREWMEMBERS SHALL WEAR APPROVED HEARING PROTECTION DEVICES ACCORDING TO THE FOLLOWING TABLE:

L_{Eq24}	65-66	67	68	69	70	71	72	73	74-75	76-77	> 77
Hours per day of hearing protection (in addition to 2 hr exercise period)	**0**	**2**	**7**	**11**	**14**	**16**	**17**	**19**	**20**	**21**	**22 (full-time)**

2. AUDIO DOSIMETRY HARDWARE SHALL REMAIN DEPLOYED AND AVAILABLE TO MONITOR CONTINUOUS NOISE LEVELS AND EXPOSURES

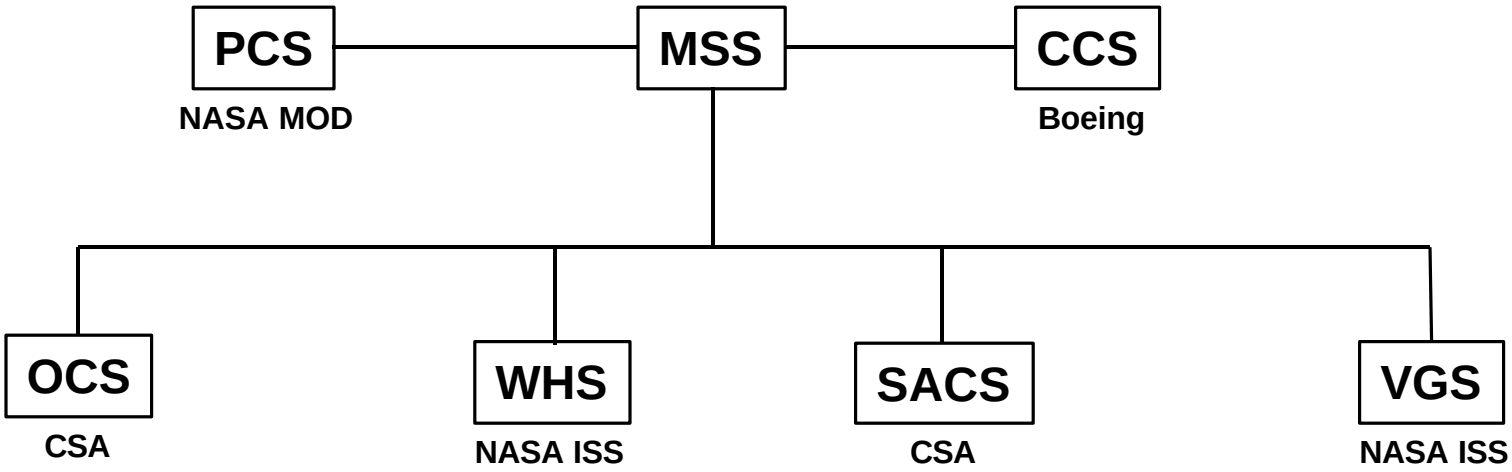
B. HEARING PROTECTION DEVICES SHALL BE REQUIRED DURING INTERMITTENT ACTIVITIES (DURATION LESS THAN 8 HOURS) THAT EXCEED 75 dBA. THE USE OF MANDATORY HEARING PROTECTION FOR ALL OCCUPANTS OF AFFECTED VOLUMES WILL BE INCLUDED IN PROCEDURES RELATED TO THESE ACTIVITIES.

C. IF 24 HOUR AVERAGE NOISE LEVELS (LEQ24) OF 75 dBA OR ABOVE ARE MEASURED, AUDIO DOSIMETRY OR SOUND LEVEL METER READINGS WILL BE CALLED DOWN AS SOON AS PRACTICAL

D. IN ADDITION TO SCHEDULED MONITORING, AUDIO DOSIMETRY OR SOUND LEVEL METER READINGS MAY BE TAKEN AT THE DISCRETION OF CREWMEMBERS, THE FLIGHT SURGEON OR FCR SURGEON.

5A
Robotics Initial Operations Capability

SOFTWARE

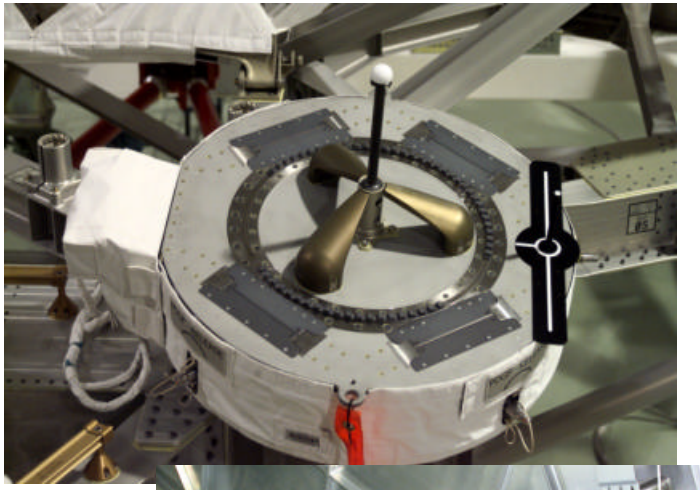


C. Hatfield / OM7 / 281-244-7766

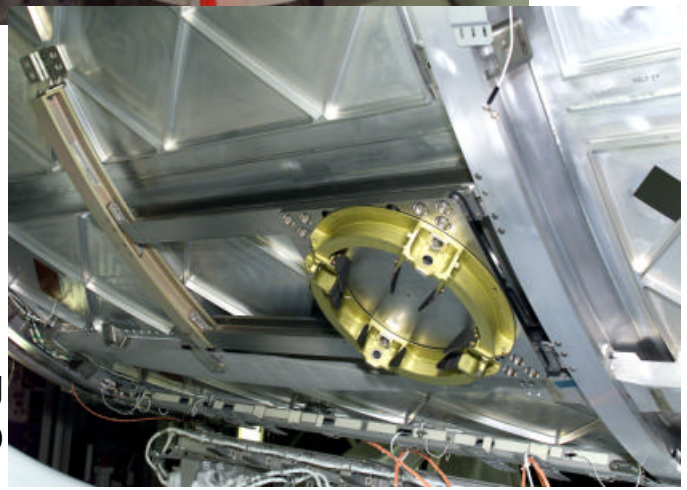
5A
Robotics Initial Operations Capability

Power Data Grapple Fixture (PDGF) on Lab

- Launched on sidewall carrier Orbiter Bay 5 Port and EVA installed on LAB.
- Provides power & data interface and serves as operating base for the SSRMS.



PDGF ORU



PDGF Mounting Ring on U.S. Lab

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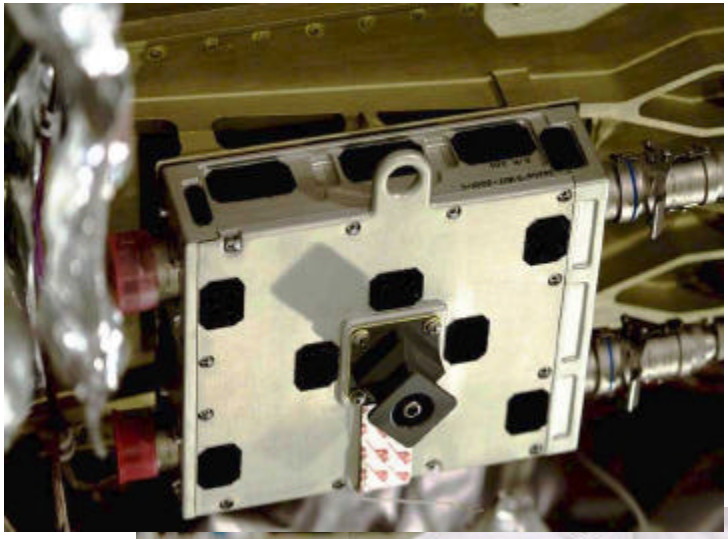
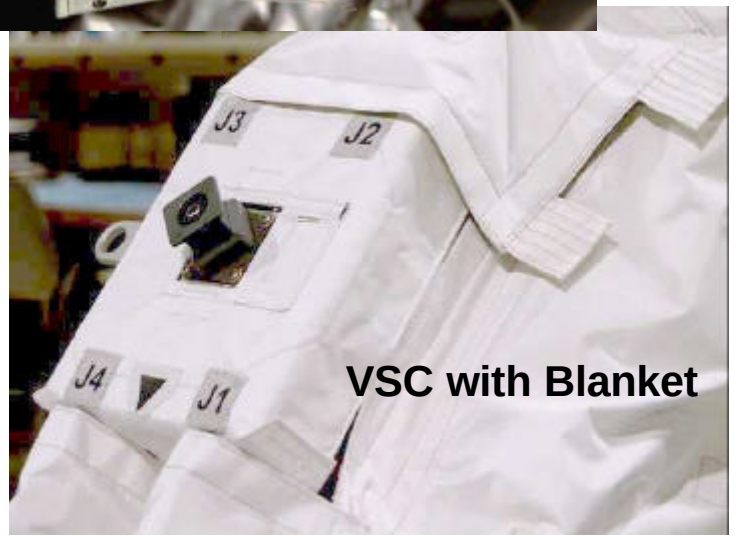
5A
Robotics Initial Operations Capability

Video Signal Converter (VSC)

- Functions as video interface between PDGF and LAB
- Launched in Middeck, EVA installed on LAB
- Installed on Lab





VSC with Blanket

C. Hatfield / OM7 / 281-244-7766

5A.1
Robotics Initial Operations Capability

Video Monitor

Translational Hand Controller (THC)

Rotational Hand Controller (RHC)

Display & Control Panel (DCP)

System Harnesses

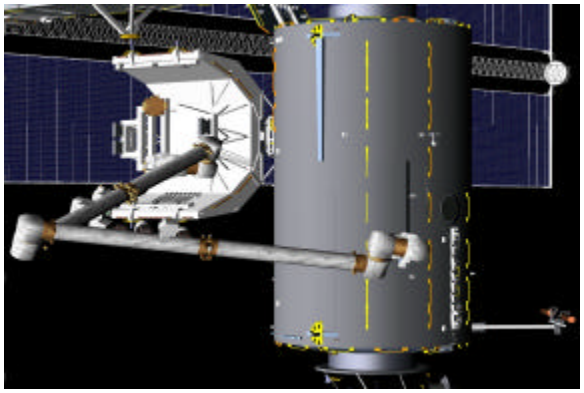
Control Electronics Unit (CEU)

ISS-B/U-D-6
C. Hatfield / OM7 / 281-244-7766

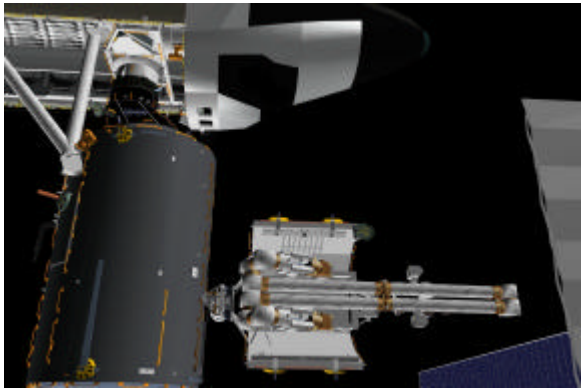
6A
Robotics Initial Operations Capability

Space Station Remote Manipulator System (SSRMS)

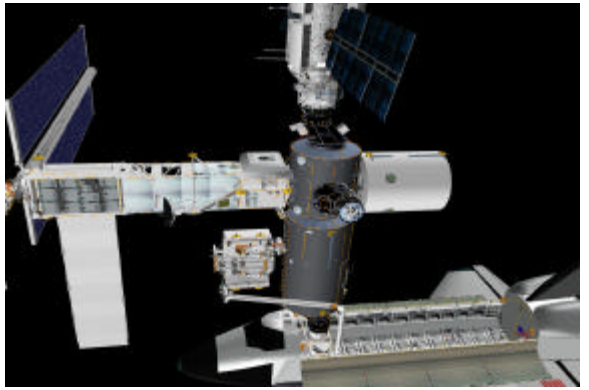
SSRMS folded on SLP



SSRMS Walk-off



SSRMS & SLP on LCA



Attach SSRMS & SLP to LCA

C. Hatfield / OM7 / 281-244-7766

Backup Material

AVIONICS/SOFTWARE BACKUP MATERIAL

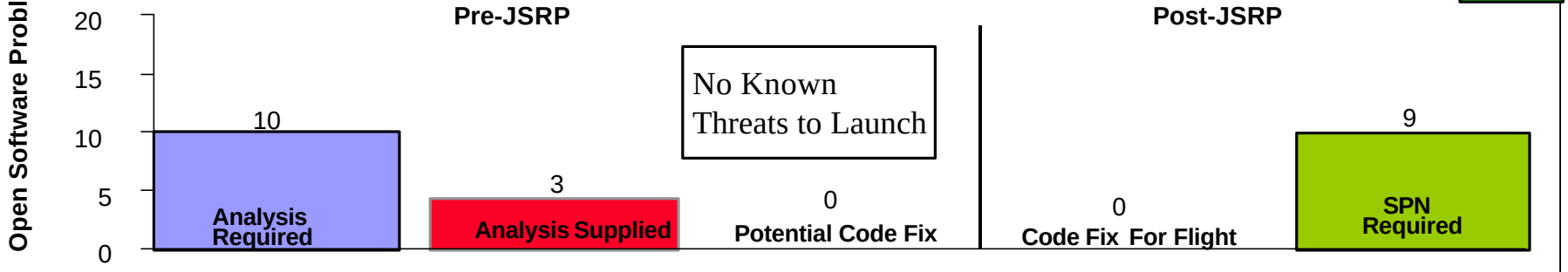
Randy Davis, 5A.1 Flight Software Integration Manager,
Telephone: 281-244-4634

Flight 5A.1 SW Plan to Launch

As of 02/21/01

G

Flight 5A.1 Open Software Status



Flight 5A.1 FSW Plan to Launch

2000 / 2001	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY

CCS R1
- 1/19 PR 18858 C&C-2 Switch Logical Device Patch(IFL 5A.1 2.1)
- 1/19 PR 18723 RWS MSS Load Code Patch (IFL 5A.1 2.1)
- 1/29 PR 19669 CCS code Patch (IFL 5A.1 2.1)
- 1/29 PR 14325 Data Load Patch (IFL 5A.1 2.1)
- 1/29 PR 19670 Ku-BAND ISIL test(PPL) (IFL 5A.1 2.1)
- 1/29 PR 19210 Update CCS Time Disp List(PPL) (IFL 5A.1 2.1)
- 1/29 PR 18689 Need a 5A.1 LDF file for CCS (IFL 5A.1 2.1)
- 1/29 PR 19396 "C_CNT110, T_CNT113" (IFL 5A.1 2.1)

GNC R1
- 8/18 (L-6) GNC R1 4R, 5A.1, 5P PPLs (IFL 5A.1 1.0)
- 11/17 (L-3) GNC R1 4R, 5A.1, 5P PPLs (IFL 5A.1 1.0)
- 2/2 PR 20038 Delivery for Flex Filters (IFL 5A.1 2.1)

LSYS 1
- 10/4 LSYS 1 PPLs # 21, 22, 23, 24, 25, 26 (IFL 5A.1 1.0)

LSYS 2
- 10/4 LSYS 2 PPLs # 21, 22, 23, 24, 25 (IFL 5A.1 1.0)

LSYS 3
- 10/4 LSYS 3 PPLs # 5, 41, 42, 43, 44 (IFL 5A.1 1.0)

Payload Config. Files
- 11/17 Payload Config. Files (IFL 5A.1 1.0)
- 11/17 Payload Config. Files- PRCU Compatible (IFL 5A.1 1.0)
- 11/17 Payload Config. Files- Byte Swapped (IFL 5A.1 1.0)

NCS R2
- 10/16 — 12/5 PR 18294 NCS R2 CBM Patch (IFL 5A.1 2.0)
- 11/6 — 1/27 PR 18294 TRC to FQT (IFL 5A.1 2.0)

MPLM
- 2/7 PR 20086 Checksum PPL (IFL 5A.1 2.1)

PVCA/PMCA
- 1/10 PR 19505 PVCA FW Refresh Patch (IFL 5A.1 2.1)
- 1/15 PR 19505 PMCA FW Refresh Patch (IFL 5A.1 2.1)
- 1/15 PR 19111 PMCA RPCM Patch (IFL 5A.1 2.1)
- 1/24 PR 19758 EEATCS TDF Qty Sen PPL (IFL 5A.1 2.1)
- 1/24 PR 19853 PCDU Current Rng Check (IFL 5A.1 2.1)
- 1/31 PR 19501 PVCA Tasking ERR Patch (IFL 5A.1 2.1)
- 2/10 PR 20194 PVCA emergency Patch (IFL 5A.1 2.1)

IFLs/Tests
- **5A.1 1.0 IFL (Launch IFL)** — 11/13
- 12/18 — 1/04 **5A.1 2. 0 IFL (Stage Ops)** — 2/23 **Stage Ops PPL Audit**
- 2/13 **5A.1 2.1 IFL (Stage Ops)**
- 2/16 **CCS R1 PR's FQT Complete**
- 2/21 ~~2/23~~ **CCS R1 Stage PR Retest Complete**
- **2/22 Mission Config Test (MCT) Complete**
- 3/1 **IFL 5A.1 2.2 Point Release**

Launch
- **3/8 5A.1 Launch**

Backup Charts

Payloads Office

- **Open Item Tracking Matrix – No constraints to launch or operations.**
- **Exceptions/Waivers – All approved.**

Open Item Tracking Matrix

(status on 2/21/01)

Item # / Open Work Tracking #		Endorsement #	Description of Open Work	Product Required for Closure/Closure Plan	Responsible Organization/ Individual	Est'd Completion Date	Risk to Flight (Low/Med/ High)	Status
2	EKAM-2	CoFR 1: k.3 CoFR 2: a.1, h.2	Update PIA-SP to implement new mounting schemes	Approved CR to PIA-SP	OZ2/D. McMahon	2/22/01	Low	CR005100 directive is in work for out of board signature.
3	EKAM-3	CoFR 1: k.3 CoFR 2: a.1, h.2	Update PIA-SP to implement hardware change	Approved CR to PIA-SP	OZ2/D. McMahon	2/22/01	Low	CR005100 directive is in work for out of board signature.
5	EKAM-5	CoFR 2: c.2.c, c.3.d	DVIS and T-1 connectivity	Test Results	DO561 / B. Robichaux	2/26/01	None	Telephone and a back-up data link support to POIC and UCSD is available and tested 12/22/00. T-1 scheduled to be on 2/26
7	HRF-1	CoFR 1: a.1, a.3, b.1, b.6, g.1 CoFR 2: a.1	ADPs -Electronic Media Kit -Integrated Rack	Integrated Rack SAR	D. Grounds	2/23/01	Low	ADP Open (dependent on Verification closures). No constraint to flight.
65	SGK-1	CoFR 2: h.1.c	Revise 5A.1 Secondary Metabolite procedures.	Revised 5A.1 Procedures	CB/Debbie Brown	3/1/01	Low	Procedure Submitted to MOD on 1/10/01for implementation to SODF
70	PDS-01	CoFR 2: e.5	GSP training scheduled to be complete	TSC Certification	C. Wigley	L- 1 Day	Low	TSC Trng scheduled at JSC on Launch -1.
71	HRF-8	CoFR 2: c.3.d	Manual Procedures Viewer (MPV) not available in TSC	MPV	D. Grounds	N/A	Low	Workaround identified if MPV is non-operational. No constraint to Flight.
72	HRF-9	CoFR 2: d.4	Document HRF Flight Rule	Flight 5A.1 Flight Rule Publication	D. Grounds	2/23/01	Low	Submitted to PODF 12/20/00 (required for HRF Rack ADP closure). Under review by Boeing ECLSS.
73	HRF-10	CoFR 2: c.2.c	HRF Virtual Private Network (VPN) link to CSA not available	VPN Link	D. Grounds	N/A	Low	FTP Capability is currently available for transfer of data as a workaround. No constraint to Flight.
75	OZ2-3	CoFR 1: h.1 CoFR 2: a.1, g.2	Manifest Request to delete MACE II from 5A.1 Descent Manifest	MR and IDRD Annex 1, CR	C. Bay	3/1/01	Low	MR submitted to delete MACE II from 5A.1 Descent manifest.

Open Item Tracking Matrix

(status on 2/21/01)

POIF-OW3	c.2	Cadre verification of command and telemetry interfaces via console tools and displays.	Cadre Operations Product Verification Plan	2/28/01	Low	
POIF-OW4	c.4.c	JOIP with Russia has been developed, but not baselined by the Bookmanager (MOD)	Baselined JOIP	2/28/01	Low	
POIF-OW6	c.5	On-board Communications Adapter (OCA) operator station in POIC - The POIC will acquire an OCA workstation for PAYCOM use. Issues still exist regarding the logistics of using this workstation. The decision on whether to use this capability for 5A.1 will be made during pre-mission console testing and simulations in February 2001	OCA Workstation	2/28/01	Low	
POIF-OW7	c.5	ISS Portable Computer System (PCS) laptop in POIC - The POIC will acquire a PCS laptop for the PAYCOM console. The PCS will be used to access Manual Procedures Viewer (MPV) and crew look-alike payload displays. Successful PCS delivery and installation is still open work, and is expected to be completed prior to 5A.1 launch in March 2001	PCS Laptop	2/28/01	Low	
POIF-OW8	c.5	Stowage Inventory Management System (IMS) database access - IMS database access is required for PAYCOM response to crew stowage questions. Access to this system from the POIC is still in work. Once access is granted, POIC Stowage will train the PAYCOMs on accessing and using this database	Access to IMS	2/28/01	Low	Accounts have been assigned to Increment 2 PAYCOMs, and access has been confirmed. Training on IMS database navigation will occur on 27 Feb, 2001.
POIF-OW11	c.5	PIMS Interface checkout to JSC	Successful PIMS interface checkout	2/28/01	Low	
POIF-OW12	c.5	OC and DM Team tool, comp, and script verification using Build 4.2.7.2 and 4.2.7.3	Cadre Operations Product Verification Plan	2/28/01	Low	
POIF-OW14	c.5	Additional Verification testing by POIC and MCC-H to integrate planning files.	Cadre Operations Product Verification Plan	2/28/01	Low	
POIF-OW15	d.1	Update Mission Operations Documentation via pre-increment OCR to include requirement to perform ARIS ORU CBT prior to scheduling any ARIS Maintenance.	Operations Change Request	2/28/01	Low	
POIF-OW22	e.3	Remaining Russian and JMSTs prior to launch	Simulations	2/28/01	Low	
POIF-OW24	e.5	Payload Developer support of remaining JMSTs and Cadre/Payload Developer simulations	Simulations	2/28/01	Low	
POIC 3	h.2.a.	HOSC to JSC TSC ICD	Board Directive	GSCB	Low	
POIC 10	h.2.a.	MPS Spares	Procurement Delivery	2/15/01	Low	
POIC 14	h.2.a.	Baselining of MuDPIS Document	Board Directive	GSCB	Low	
POIC 15	h.2.a.	OSTPGMT compatibility	SW Fix	2/15/01	Low	
POIC 26	h.2.a.	Flight SW Verification	Verification Report	2/15/01	Low	
POIC 32	h.2.a.	Hazardous command certification	PSRP Memo	2/15/01	Low	
POIC 36	h.2.a.	No access to ANTMAN	JSC Delivery of SW	2/15/01	Low	
POIC 37	h.2.a.	OCA not operational	Procurement Delivery	2/15/01	Low	
POIC 49	h.2.a.	NRT Processing	SW Fix	2/15/01	Low	

HRF Hardware ICD Exceptions

(HRF Rack)

Exception #	Title	PCB	Status
57200-NA-0001A	Delta T MTL Return Temperature		Approved
57200-NA-0003D	Loads	6/29/99	Approved
57200-NA-0004B	Connector Spacing Exception	8/2/00	Approved
57200-NA-0009	ESD Exception	9/6/00	Approved
57200-NA-0010A	Protrusion Exception	10/27/00	Approved
57200-NA-0011A	HRF Personal Computer System Exception to the SSP 30237 RE02 EMI Requirements	OSB 8/21/00	Approved
57200-NA-0013	Connector Pin Identification Exception for the HRF Workstation and Ultrasound	10/4/00	Approved
57200-NA-0014	Fire Hole Decal Exception for HRF Integrated Rack One	OSB 8/21/00	Approved
57200-NA-0015A	Toggle Sw itch Exception for the HRF Ultrasound	10/4/00	Approved
57200-NA-0016A	Control Spacing Exception for HRF Integrated Rack One Ultrasound	10/27/00	Approved
57200-NA-0017A	HRF Rack 1 Exceptions to the SSP 30237 CE01, RE02 and CE03 EMI Requirements	10/4/00	Approved
57200-NA-0018	HRF Rack 1 Exceptions to Corona	11/8/00	Approved

Exception #	Title	PCB	Status
57200-NA-0020	HRF Delta T MTL Return Temperature	12/13/00	Approved
57200-NA-0025	HRF Time Constant	2/21/01	Approved

HRF Hardware ICD Exceptions

(Radiation Suite)

Exception #	Title	PCB	Status
57228-NA-0001	Waive EMI Susceptibility Testing for DOSMAP and Torso	9/6/00	Approved
57228-NA-0003A	Protrusion Exception for Rad Suite Hardw are	10/27/00	Approved
57228-NA-0004	PDS Exception for Toggle Sw itch	10/4/00	Approved
57228-NA-0006A	PDS Exception for Push Buttons and Barrier Guards	11/8/00	Approved
57228-NA-0007	Thermoluminescent Detector (TLD) Reader Connector Spacing Exception	10/4/00	Approved
57228-NA-0008	Conducted EMI Exceedance on Passive Dosimeter System	10/4/00	Approved
57228-NA-0011	HRF Radiation Suite Exception to Corona Requirement	10/4/00	Approved
57228-NA-0012A	HRF Radiation Suite Exception to SSP 30237 RE03 EMI Requirement	10/27/00	Approved
57228-NA-0013	HRF Radiation Suite Exception to Control Spacing and Connector Arrangement	11/29/00	Approved OSB

HRF Hardware ICD Exceptions

(Hoffman-Reflex)

Exception #	Title	PCB	Status
57229-NA-0001	EMI Waiver (RE02, RE03, Conducted Emissions, and Susceptibility	11/10/99	Approved
57229-NA-0002	H-Reflex Exception for Crew Induced Loads	08/02/00	Approved
57229-NA-0003	H-Reflex Exception for Deployed Protrusions	10/27/00	Approved
57229-NA-0004A	H-Reflex Exception for Finger Access Clearance	10/4/00	Approved
57229-NA-0005	H-Reflex Exception for Self-Locking Connectors	10/4/00	Approved
57229-NA-0006	H-Reflex Knee Brace Exception for Full Size Range Accommodation	08/02/00	Approved
57229-NA-0007	H-Reflex Exception for Connector Pin Identification	OSB 8/21/00	Approved

PERS and IMAX Exceptions

Exception #	Title	PCB	Status
57236-NA-0001A	PERS Labeling	1/26/01	Approved
57221-NA-009A	Incorporation of IMAX Changes	10/22/00	Approved
57221-NA-0010C	Exception to US Lab Nadir w indow keep-out zone	12/14/00	Approved
57221-NA-0011C	Small Knobs Torsion Exception for the IMAX3D Window Bracket	12/13/00	Approved
57221-NA-0013A	SSP 57221 Changes to Incorporate IMAX3D Changes to Manifest and Update of Requirements to Rev. E of SSP 57000	12/13/00	Approved

POIF Exceptions

POIC core capabilities are in place. Exceptions have operational workarounds.

Exception Number	Endorsement Number	Exception Title	Description
POIF-E1	c.1	ETE Command & Control	Lack of ability to verify ETE C&C with Tlm feedback.
POIF-E2	c.2	GIANT System	Unreliable performance of GIANT System to support IEPT conferences.
POIF-E3	c.5	Data Flow Plan Generation	Inability of DSRC to build a data flow plan. Increment 2 will have to build the data flow plan manually.
POIF-E4	c.5	Evaluation of PL Stowage prior to Launch	Lack of the ability to access PL stowage prior to launch with specific stowage locations.
POIF-E5	e.2	Russian PL Crew Training Cert.	Without the delivery of Russian training products and a baselined MITP, PL Operations is not able to certify that Russian PL Crew Training will accomplish the req'ts.
POIF-E6	e.5	PD Space-to-Ground Communication Certification	Requirements change that must be processed to eliminate the requirement for PDs to be certified to talk on Space-to-Ground.
POIF-E7	g.2	Russian Payload Data	Data was not available on the Russian payloads. Only US Payloads were assessed.
POIF-E8	h.1.b	Payload OOS Development	Payload OOS Development without having a system OOS input from MOD.
POIF-E9	h.2	Russian Payload Data	Data was not available on the Russian payloads. Only US Payloads were assessed.
POIF-E10	m.3	Operations Hazard Controls	PSRP defined several operations hazard controls for HRF maintenance. HRF has decided not to fly any maintenance procedures, therefore no Maintenance will be allowed to be scheduled for HRF.
POIF-E11	m.3	SRP Hazard Controls	Kardoi utilizes system medical hardware to support their operations and POIF does not verify SRP operational controls.
POIC 1	c.2	Payload Command Acknowledgement	JSC not returning fourth command acknowledgement (FSV2) to indicate PL MDM acceptance/rejection of payload commands.
POIC 2	c.2	Time Authentication	Rejection of POIC real-time time authentication commands during CHeCKS Dumps.
POIC 4	c.3	Cyrillic Font	POIC inability to support Cyrillic Font in files received from JSC or Russia.
POIC 5	c.2.e	RSA Access to PIMS	Inability to provide remote access to PIMS to Russia due to Russian government prohibition of the use of encryption.
POIC 40	e.3	IST Manpower	Insufficient IST manpower to support simulations and PPS real-time problem resolution outside the M-F 8am to 5 pm timeframe.